

CURRICULUM VITAE (2026)

PERSONAL DATA

- Name : Noriko YUI
- Affiliation:
Department of Mathematics and Statistics
Queen's University
Kingston, Ontario Canada K7L 3N6
Tel (613) 533-2421; Fax (613) 533-2964
Mobile (647) 537-9034
email yui@queensu.ca
- Home Addresses:
2350 Dundas Street West #2814
Toronto, Ontario M6P 4B1
Mobile (647) 537-9034
and
82 Ontario Street Apt #606
Kingston, Ontario K7L 5M2
Mobile (647) 537-9034
- Date of Birth and Place:
September 28, 1943, Yamanashi Prefecture, Japan
- Citizenship: Japanese, Landed Immigrant of Canada and Denmark
- Family: Married to George A. Elliott

HIGHER EDUCATION

- Ph.D. in Mathematics, Rutgers University, October 1974
Graduate Work in Mathematics, Rutgers University, 1969–1974
Took summer courses at SUNY Buffalo, 1970, 1971
Took a course at The Institute for Advanced Study, 1972 Spring
Took parts in research seminars at University of Copenhagen, 1972–1974
Graduate Work in Mathematics, Tsuda College, 1966–1969
- B.Sc. in Mathematics, Tsuda College, March 1966
Undergraduate Work in Mathematics, Tsuda College, 1962–1966
- Ph.D. Thesis: *Elliptic Curves and Formal Groups* (105 pages)
- Principal Ph.D. Thesis supervisor: Richard T. Bumby (Rutgers University)
(Frans Oort (University of Utrecht) was the most influential mathematician for my thesis, though he was not an official supervisor)

ACADEMIC AND PROFESSIONAL APPOINTMENTS

- Professor, Queen's University, 1990–Present
- Associate Professor, Queen's University, 1987–1990
- Associate Professor, University of Toronto, 1982–1987
- Associate Professor, Ohio State University, 1981–1982
- Assistant Professor, Universität des Saarlandes, 1980–1981
- Research Associate, SFB 40 Universität Bonn, 1979–1980

FELLOWSHIPS

- Newnham College, University of Cambridge, Visiting Bye-Fellow :
2024 May, 2020 May–June (cancelled due to COVID), 2007 April–June,
2002 April–July, 1997 April–August, 1993 January–July
- Newnham College, University of Cambridge, The American Friendship
Research Fellow : 1990–1991
- Newnham College, University of Cambridge, The Ann Horten Senior
Research Fellow : 1989–1990
- University of Ottawa, Postdoctoral fellow : 1978–1979
- University of Copenhagen, Postdoctoral Fellow : 1975–1978

VISITING POSITIONS

Europe

- University of Koeln, 2017 June, 2015 May.
- Steklov Institute, St. Petersburg, 2018 May.
- University of Muenster, 2015 April 27–May 3.
- Humboldt University, Berlin, 2017 June, 1994 May–July.
- Erwin Schrödinger Institute, Vienna, 2009 March 14–21, 1999 June.
- EPFL Laussane, Switzerland, 2007 November 5–11.
- Hebrew University of Jerusalem, 2010 May 8–14, 2007 March 11–18.
- IHES, 2016 January–February, 2013 May–June, 2010 April–July.
2007 January–March.
- University of Mainz (Mathematics Department), 2024 July, 2019 January, 2017 May,
2016 May, 2015 May, 2004 June 7–11.
- University of Mainz (Physics Department), 2025 March, 2017 March (declined)
- University of Saarlands, 2015 June, 2004 May, 2002 June, 1997 June.
- University of Copenhagen, 2018 May, 2016 January, 2010 September,
2009 November, 2006 February, 2005 September, 2004 September, 2000 June.
Visiting Researcher : 1972–1975.
- University of Hannover, 2010 June, 2006 May, 2004 April 1–30.
- University of Leiden, Kloosterman Chair, 2004 January 15 – March 15.
- University of Leiden, Lorenz Center, 2005 August–September.
- University of Utrecht, 2010 May.
- Newnham College, University of Cambridge, 2007 April–June, 2002 April–July,
1998 April–May, 1997 April–July, 1996 April–May, 1995 May–June, 1994 May–July,
1993 January–July, 1991 April–July, 1990 April–July.
- Max-Planck Institut für Mathematik Bonn, 2024 May–July, 2019 February–June,

- 2017 May–June, 2015 May–June, 2006 May–June, 2004 May–June,
2001 April–May, 1999 March–April, 1997 June, 1996 June, 1994 January–April.
- CRM Barcelona, 2001 January– March, 1996 May.
- The Newton Institute, University of Cambridge, 2020 May–June (cancelled
to to COVID), 2002 April–July, 1998 February–May, 1993 January–July.
- DPMMS University of Cambridge, 2017 May, 2007 April–June, 2005 August,
2002 April–July, 1998 April–May, 1997 April–July, 1996 April–May, 1995 May–June,
1994 May–July, 1993 January–July, 1991 April–July, 1990 April–July.
- ETH Zürich, 2001 June, 1999 April.
- Oberwolfach Forschungs Institut für Mathematik (MFO), Research in Pairs (RiP)
(with C. U. Jensen and A. Ledet), 2000 July.
- Oberwolfach Forschungs Institut für Mathematik (MFO), 2016 May,

Asia

- National Taiwan University, 2020 August (cancelled due to COVID),
2019 July–August, 2018 July–August, 2014 July, 2011 June (cancelled)
- National Center for Theoretical Sciences (NCTS), Hsinchu, Taiwan,
2014 July–August, 2011 June (canceled).
- National Chiao Tung University, Taiwan, 2014, August, 2011 June (canceled).
- IPMU, University of Tokyo, June 2012.
- Nagoya University, 2012 June, 2009 June 21–26.
- Tsukuba University, 2014 July, 2012 July, 2009 June, 2005 May.
- Hiroshima University, 2018 July 18–21, 2009 May 28–30.
- Hebei Normal University, 2008 July.
- Academy of Sciences of China, Morningside Center, 2008 July.
- Tsinghua University, 2008 July.
- TSIMF, Sanya, China, 2015 August–September (Declined).
- TSIMF, Sanya, China, String-Math 2015, 2015 December–2016 January.
- China East Normal University, Shanghai, 2008 June–July.
- Center of Mathematical Sciences, Hangzhou, 2008 June.
- Kobe University, 2004 July.
- Chiba University, 2000 May.
- Tôhoku University, 2000 May, 1998 October, 1996 July, 1988 June.
- Tokyo University, 2008 July, 1996 July, 1995 July.
- Kyoto University, 2006 August, 2002 August, 2000 May, 1997 July, 1995 July.
- Kyushu University, 1997 August.
- Tsuda University, 2025 June–July, 2019 July–August, 2018 June–August,
2017 July–August, 2016 July–August, 2015 July–August, 2014 June–August,
2012 May–July, 2010 August, 2009 May–July, 2008 July–August, 2007 August,
2006 July–August, 1998 October, 1997 August, 1996 July, 1996 July,
1993 October–November, 1992 May–June, 1989 May–June, 1988 May–June,
1986 May–June.
- Hokkaido University, 2023 July, 2006 August, 2005 May–June, 1992 July.
- Hokkaido University of Education Hakodate, 2019 August, 2007 August, 2006 July,
2005 June.
- University of Tokyo, 1986 May–June, 1982 July–August, 1979 July–September.

- RIMS Kyoto University, 1977 May–August.
- KIAS, 2017 August 12–19, 2017.
- OIST, 2023 July–August, 2019 February.
- Gakushuin University, 2023 July.
- Tokyo Metropolitan University, 2026, July.

U.S.A., Canada and Mexico

- CIMAT, Mexico, 2017 August (declined), 2016 March–April.
- Universidad Autonoma, Mexico City, 2016 April.
- ICERM Brown University, 2015 October.
- Louisiana State University, 2017 April, 2015 April, 2011 February.
- Rutgers University, String Theory Group, 2015 February.
- Satellite workshop of String Math 2014, Calabi–Yau Manifolds and their Moduli, University of Alberta, 2014 June.
- University of Saskatchewan, April 2019.
- The Fields Institute, 2013 July–December. Thematic Program : Calabi–Yau Varieties: Arithmetic, Geometry and Physics.
- AIM Palo Alto: Workshop on Gromov-Witten invariants and number theory, 2013 April (declined).
- Simons Institute for Theoretical Physics, Stony Brook, 2016 September (declined), 2012 May
- Boston University, 2008 June, 2006 November.
- Kavli Institute for Theoretical Physics (KITP), University of California, Santa Barbara, 2005 November–December.
- Perimeter Institute for Theoretical Physics, 2004 November.
- American Institute of Mathematics, 2002 December.
- The Fields Institute, 1999–2016, 1993 September–December
- CRM Montreal, 1998 September–1999 June
- MSRI Berkeley, Organizer of the Special Half Year Program *Algorithmic Number Theory*, 2000 August–December
- MSRI Berkeley, Member, 1987 May–June, 1985 May–June
- The Institute for Advanced Study Princeton, Lecturer for the Mentoring Program for Women in Mathematics, 1999 May
- Pennsylvania State University, Visiting Professor : 2002 April, 2000 February, 1998 April
- University of Missouri in St. Louis, October 2018.
- Utah State University, Salt Lake City, July 5–8, 2019.

Invitations in the near future

- Max-Planck Institute for Mathematics, Bonn, Germany, January – March 2027.
- Hokkaido University of Education, Hakodate, Japan, July 2027.
- ICMS Edinburgh, UK.

HONORS

- The 2022 Fellow of the Canadian Mathematical Society, elected June 2022.
- PIMS Hugh Morton Lecturer, University of Saskatchewan, April 2018.
- Fellow of the Fields Institute, elected June 2006.
- University of Leiden, Kloosterman Chair, January–March 2004.
- MSRI, Berkeley CA: An organizer of a special half year program *Algorithmic Number Theory*, August–December 2000.
- The Ann Horten Senior Research Fellowship in the Sciences, Newnham College, University of Cambridge, 1989–1990.
(I was awarded the fellowship, on the occasion of the centenary celebration of Phillipa Fawcett who was ranked “Above the Senior Wrangler” in the Mathematical Tripos of 1890.)
- Queen’s National Scholar, 1987–1990.
- Honorable Mention by the AMS Research Fellowship Committee, 1975.
- An official member of the nominating committee for the Kyoto Prize in Mathematical Sciences, since 1990.

RESEARCH GRANTS

I. Natural Sciences and Engineering Research Council of Canada (NSERC)

- Research Grant
 - Extension of the existing grant, 2026–2028
 - \$15,000 (per annum), 2019–2026
 - \$14,000 (per annum), 2014–2018
 - \$16,000 (per annum), 2009–2014
 - \$20,000 (per annum), 2004–2009
 - \$17,000 (per annum), 2000–2003
 - \$19,635 (per annum), 1999–2000
 - \$17,000 (per annum), 1996–1999
 - \$20,000 (per annum), 1992–1996
- Individual Operating Grants
 - \$20,000 (per annum), 1989–1992
 - \$18,913 (per annum), 1986–1989
 - \$ 4,631 (per annum), 1983–1986
- Equipment Grant (Group Grant)
 - \$28,000, 1995
 - \$21,336, 1989
- Equipment Grant (Individual)
 - \$8,000, 1998
- Infrastructure Grant (Group Grant)
 - \$12,500, 1995–1996
 - \$25,000 (per annum), 1992–1994
- Conference Grant for the third CNTA (Group Grant)
 - \$20,000, 1991
- JSPS–NSERC Exchange Award with Japan, 1998
 - Professor Masahiko Saito, Kobe University visited Queen’s from June 1 to August 31, 1998 supported by JSPS
- Bilateral Exchange Award with United Kingdom, 1993–1994
 - Royal Society of London: £ 5,700
 - NSERC: Travel Expenses \$ 2,410
- Bilateral Exchange Award with United Kingdom, 1989–1990
 - Royal Society of London: £ 1,800
 - NSERC: Travel Expenses \$ 1,211

II. Queen’s University

- Advisory Research Committee’s Grants
 - Arne Ledet (Postdoctoral Fellow), \$25,000, 1997–1999
 - Helena Verrill (Postdoctoral Fellow), \$2,000, 1996–1997
 - Arithmetic Seminar \$5,000, 1991–1992
 - CNTA ’91 \$7,500, 1990–1993
 - Fernando Gouêa (Postdoctoral Fellow), \$7,500, 1990–1991
 - Algebra and Number Theory Seminar, and
 - Jaap Top (Postdoctoral Fellow) \$5,000, 1989–1990

- Principal's Development Funds
 - \$4,000, 1988–1990
 - \$5,000, 1988–1989
- Research Initiation Grants
 - \$ 9,445, 1989–1991
 - \$16,500, 1987–1991
- Visiting Scholars Award, Arts and Science
 - \$2,500, 1995–1996
- Women Visiting Scholars Award, Applied Sciences
 - \$2,600, 1994–1995

III. University of Toronto

- Pure and Applied Sciences Committee's Small Grants
 - \$1,300, 1983–1984

IV. Other granting agencies

- The Fields Institute Opportunity for Collaborations US (FOCUS) program.
(with A. Clinger (Missouri) and A. Malmendier (Utah State))
at Fields Institute
2026, May
Travel, Room and Board for Dr. Clinger and Malmendier
\$8,000
- BIRS 5-Day Workshop on “Modular Forms in Number Theory and Physics”
(with L. Long, J. Top and W. Zudilin)
at WIAS, Hangzhou, China
September 20–25, 2020 (postponed to 2022, due to COVID-19; cancelled at the end)
Room and Board for 42 participants
- The Fields Institute Weekend Workshop on “Algebraic Varieties”
(with J. Lewis)
March and November 2017.
\$4,000
- BIRS 5-Days Workshop on “Modular Forms in Calabi–Yau Manifolds”
(with C. Doran, Y. Goto and L. Long)
2016, September 25–30
Room and Board for 42 participants
- Tsuda College and Okinawa Institute of Science and Technology Joint Workshop on
“Calabi–Yau Varieties: Arithmetic, Geometry and Physics”
(with K. Matsuno and T. Oda)
August 1–3, 2016
20,0000 JPY $\approx$ \$2,300
- The Fields Institute Retrospective Workshop on “Calabi–Yau Varieties:
Arithmetic, Geometry and Physics” at Hestmonceaux Castle
(with M. Gross, R. Laza and M. Schütt)
June 20–25, 2016
\$30,000

- The Fields Institute Weekend Workshop on “Algebraic Varieties”,
(with J. Lewis)
2015–2016, November and March
\$4,000
- Tsuda College Mini–Workshop on “Calabi–Yau Varieties:
Arithmetic, Geometry and Physics
August 5–7, 2015
\$200
- The Fields Institute Weekend Workshop on “Algebraic Varieties”,
(with J. Lewis)
November 2014
\$2,000
- Tsuda College Mini–Workshop on “Calabi–Yau Varieties:
Arithmetic, Geometry and Physics
August 7–8, 2014
\$200
- The Fields Institute Weekend Workshop on “Algebraic Varieties”,
(with James Lewis)
March 2014
\$2,000
- The NSF grants for the US participants
The Fields Institute Thematic Program on “Calabi-Yau Varieties:
Arithmetic, Geometry and Physics”,
(with M. Gross and R. Laza)
2013 July–December.
US \$30,000.
- The Fields Institute Thematic Program on “Calabi-Yau Varieties:
Arithmetic, Geometry and Physics”,
(with M. Gross, S. Gukov, R. Laza, M. Schuett, J. Walcher, and S.-T. Yau)
2013 July–December.
\$350,000.
- The Perimeter Institute Workshop on “Physics around Mirror Symmetry”
(with J. Gomis and J. Walcher)
October 21–25, 2013
\$30,000
- The Fields Institute Workshop on “Arithmetic and Geometry
of K3 surfaces and Calabi-Yau threefolds”
(with C. Doran, S. Kondo, J. Lewis, R. Laza and M. Schuett)
August 16–25, 2011.
\$30,000 for Travel, Room and Board for ca. 65 participants
- NSF Grants for US Participants
The Fields Institute Workshop on “Arithmetic and Geometry of
K3 surfaces and Calabi-Yau threefolds”
(with C. Doran, S. Kondo, J. Lewis, L. Razu and M. Schuett)
August 16–25, 2011.
\$24,000 for Travel, Room and Board for ca. 30 US participants

- BIRS 5-Day Workshop on “Number Theory and Physics at the Crossroads”,
(with V. Batyrev, C. Doran, S. Gukov and D. Zagier)
May 8–13, 2011.
Room and Board for 42 participants
- The Fields Institute Biannual Workshop on “Algebraic Varieties”
(with James Lewis)
November 2010 and March 2011
\$2,000.
- Tsuda College 2-Day Workshop on “Number Theory, Geometry and Physics
at the Crossroads”
August 30–31, 2010.
\$1,300 from Tsuda College
- The Fields Institute Biannual Workshop on “Algebraic Varieties”
(with James Lewis)
November 2009 and March 2010
\$2,000.
- ESI two months workshop on “Number Theory and Physics”
(with A. Carey, A. Connes, H. Grosse, D. Kreimer, S. Paycha, S. Rosenberg)
March–April 2009.
- BIRS 5-Day Workshop on “Number Theory and Physics at the Crossroads”,
(with C. Doran, S. Gukov and D. Zagier)
Room and Board, Banff, September 21–25, 2008.
- Tsuda College Workshop on “Number Theory and Physics at the Crossroads”
August 4–6, 2008.
\$1,300 from Tsuda College
- Clay Mathematics Institute Workshop: Motives, Quantum Field Theory and
Pseudodifferential Operators, Boston University
(with D. Kreimer, S. Rosenberg, et. al)
June 2–13, 2008.
- The Fields Weekend Workshop on “Algebraic Varieties” (with J. Lewis)
Travel expenses for young participants,
March and November 2008
\$2,000
- The CMS Winter Meeting at Toronto on 2006. A core session on
“Calabi–Yau Varieties and Mirror Symmetry” (with James Lewis)
\$3,000 from University of Toronto.
- The Fields Weekend Workshop on “Calabi–Yau Varieties and Mirror Symmetry”
(with J. Lewis)
Travel expenses for young participants, March and October 2006, \$2,000.
November 2007, \$1,000.
- Tsuda College Mini-Workshop on “Modular Forms, Calabi–Yau Varieties and
String Duality”, August 2–3, 2006.
\$1,300 from Tsuda College.
- BIRS 5-Day Workshop on “Modular Forms and String Duality”
(with C. Doran and H. Verrill)
Room and Board, Banff, June 3–8, 2006.

- Tsuda College Mini-Workshop on “Modular Forms, Calabi–Yau Varieties and String Duality”, June 10–11, 2005.
\$1,200 from Tsuda College.
- The Fields Weekend Workshop on “Algebraic Varieties of Higher Dimensions with Special Emphasis on Calabi–Yau Varieties and Mirror Symmetry”
(with J. Lewis)
Travel expenses for young participants, March and November, 2005.
- BIRS Research in Teams (with B. Mazur and D. Zagier) on
“Number Theory in Mirror Symmetry”
Room and Board for Two Weeks in Summer 2005.
(Approved, but declined the invitation).
- The Perimeter Institute and the Fields Institute, Workshop on
“Mirror Symmetry” (with D. Auroux, M. Gorss and K. Hori)
\$65,000 from Perimeter and \$35,000 from Fields, November 19–23, 2004.
- The Fields Institute, A Fields Institute Postdoctoral Support for Shabnam Kadir
\$20,000, August 2004–July 2005.
- Tsuda College Mini-Workshop on “Calabi–Yau Varieties, Mirror Symmetry and Related Topics”
100,000 Yen $\approx$ \$1,300, July 2004.
- The Canadian Mathematical Society, Co-Editor-in-Chief of the Canadian Mathematical Bulletin, Teaching Replacement
\$5,000, January–April 2004.
- The Fields Institute Thematic Program “The Geometry of String Theory”
A member of the scientific committee, August 2004–July 2005.
- BIRS 5-Day Workshop (with V. Batyrev, S. Hosono, J. Lewis, B.-H. Lian, and S.-T. Yau) on “Calabi–Yau Varieties and Mirror Symmetry”
Room and Board, Banff, December 11–16, 2003.
- The Fields Institute Conference Grant (with V. Batyrev, S. Hosono, J. Lewis, B.-H. Lian, and S.-T. Yau)
“Calabi–Yau Varieties and Mirror Symmetry”
\$20,000, July 23–29, 2001.
- MITACS “Abelian varieties and Cryptography” (with Ram Murty and Kumar Murty, et al.)
\$20,000, September 2000.
- NATO Advanced Study Institute Supplementary Grant (with J. Lewis and B. Gordon)
“Arithmetic and Geometry of Algebraic Cycles” at Banff Centre for Conferences
200,000 BFr. $\approx$ \$10,000, 1999–2000.
- CRM Montreal Number Theory Theme Year, Teaching Replacement
\$10,000, September 1998–April 1999.
- CRM Montreal Conference Grant (with J. Lewis and B. Gordon)
“Arithmetic and Geometry of Algebraic Cycles” at Banff Centre for Conferences
\$60,000, June 7–19, 1998.
- NSF Conference Grant (with J. Lewis and B. Gordon)
“Arithmetic and Geometry of Algebraic Cycles” at Banff Centre for Conferences
US \$ 15,000, June 7–19, 1998.

- NSA Conference Grant (with J. Lewis and B. Gordon)
“Arithmetic and Geometry of Algebraic Cycles” at Banff Centre for Conferences
US \$ 10,500, June 7–19, 1998.
- NATO Advanced Study Institute Grant (with J. Lewis and B. Gordon)
“Arithmetic and Geometry of Algebraic Cycles” at Banff Centre for Conferences
3,100,000 BFr. $\approx$ \$140,000, June 7–19, 1998.

LIST OF PUBLICATIONS: RESEARCH CONTRIBUTIONS

Books (refereed)

[1] *Generic Polynomials : Constructive Aspects of the Inverse Galois Problem* (with C.U. Jensen and A. Ledet), (viii+268 pp.), MSRI Publications Series Vol. **45**, Cambridge University Press, December 2002. MR 1969648 (2004d:12007). ZB 1042.12001.

[2] *Arithmetic of diagonal hypersurfaces over finite fields* (with F. Q. Gouvêa) London Mathematical Society Lecture Notes Series, **209**, Cambridge University Press, (xii + 169 pages), May 1995. MR1340424 (97k:11095); ZB 833.14015.

Papers published in refereed journals:

[3] *Supercongruences for rigid hypergeometric Calabi–Yau threefolds* (with L. Long, F.-T. Tu and W. Zudilin), *Advances in Math.* **393** (2021), 108058, 49 p.

[4] *The automorphy of K3 fibered Calabi–Yau threefolds with involution over $\mathbb{Q}$* (with Y. Goto and R. Livné), arXiv:1212.3399. *Communications in Number Theory and Physics*, Vol. **7**, No. 4 (2013), pp. 581–670. MR3228297; ZB.

[5] *Rigid Calabi–Yau threefolds over $\mathbf{Q}$ are modular* (with F. Q. Gouvea). *Expositiones Mathematicae* **29** (2011), pp. 142–149. MR2785550 (2012g:14067) ; ZB 1230.14056.

[6] *Zeta-functions and L-series of K3 fibered Calabi–Yau threefold* (with Y. Goto and R. Kloosterman). *International Journal of Mathematics*, Vol. **22**, No. 1 (2011), pp. 67–129. MR2765443 (2012c:14049) ; ZB 1218.14027.

[7] *The modularity of certain K3 surfaces with non-symplectic group actions* (with R. Livné and M. Schütt). *Math. Annalen* **348** (2010), pp. 333–355. MR2672305 (2011g:14093) ; ZB 1200.14072.

[8] *K3 surfaces of finite height over finite fields* (with Jeng-Daw Yu), *J. Math. Kyoto University* **48** (2008), no. 3, pp. 499–519. MR2511048 (2010j:11099) ; ZB 1174.14034.

[9] *Monodromy of Picard–Fuchs differential equations for Calabi–Yau threefolds* (with Y.-H. Chen and Y. Yang), *J. Reine Angew. Math. (Crelle’s Jour.)* **616** (2008), pp. 167–203. MR2369490 (2009m:32046); ZB 1153.34055.

[10] *Differential equations satisfied by modular forms and K3 surfaces* (with Y. Yang), *Illinois J. Math.* **51**, no.2 (2007), pp. 667–696. MR2342682 (2008g:11071); ZB 1121.11053.

[11] *Explicit equations of some elliptic modular surfaces* (with J. Top), *Rocky Mountain J. Math.* **37**, No.2 (2007), pp. 663–687. MR2333391 (2008c:14049); ZB 1140.14036.

[12] *The modularity of certain non-rigid Calabi–Yau threefolds* (with R. Livné), *J. Math. Kyoto Univ.* **45**, no.4 (2006), pp. 645–665. MR2226623 (2007b:11093); ZB 1106.14025.

[13] *A generating function of higher-dimensional Apostol–Zagier sums and its reciprocity law* (with S. Fukuhara), *J. Number Theory* **117** (2006), pp. 87–105. MR2204736 (2006j:11055); ZB 1163.11034.

[14] *The Dedekind symbol associated with the Eisenstein series of weight two* (with S. Fukuhara), *Archiv der Mathematik* **85**, no. 2 (2005), pp. 128–140. MR2161802 (2006e:11050); ZB 1073.11027.

[15] *Elliptic Apostol sums and their reciprocity laws* (with S. Fukuhara), *Transaction of the American Mathematical Society*, **356** (2004), no. 10, pp. 4237–4254. MR2058844 (2005b:11050). ZB 1055.11028.

[16] *Noncommutative polynomial reciprocity formulae* (with S. Fukuhara and Y. Matsumoto), *International J. Math.* **12**, No. 8 (2001), pp. 973–986. MR1863288 (2002k:

11003); ZB 1111.11300.

[17] *The modularity conjecture for rigid Calabi–Yau threefolds over $\mathbb{Q}$* (with Masahiko Saito), Kyoto J. Math. **41**, No.2 (2001), pp. 403–419. MR1852991 (2002k:11102); ZB 1077.14546.

[18] *Formal Brauer groups arising from certain weighted K3 surfaces*, J. Pure Applied Algebra Vol.**142**, No. 3 (1999), pp. 271–296. MR1721096 (2000h:14015); ZB 948.14037.

[19] *Observations on Fermat motives of K3 type* (with F. Q. Gouvêa), J. Number Theory **71** (1998), No. 2, pp. 203–226. MR1633805 (99f:11076); ZB 921.14001.

[20] *On the singular values of Weber modular functions* (with D. Zagier), Mathematics of Computation **66** (1997), pp. 1645–1662. MR1415803 (99i:11046); ZB 892.11022.

[21] *A note on the norms of algebraic numbers associated to Jacobi sums*, J. Number Theory **47** (1994), pp. 102–129. MR1273459 (95c:11103); ZB 798.11045.

[22] *Gauss polynomials and the rotation algebra* (with M.-D. Choi and G.A. Elliott), Inventiones Math. **99** (1990), pp. 225–246. MR1031901 (91b:46067); ZB 665.46051.

[23] *Jacobi sums, Fermat motives and the Artin–Tate formula* (with N. Suwa), C. R. Math. Rep. Acad. Sci. Canada **11** (1989), pp. 183–188. MR1010925 (90h:11052); ZB 716.11034.

[24] *The additive characters of the Witt ring of an algebraic number field* (with P.E. Conner), Canadian J. Math. **40** (1988), pp. 546–588. MR0960596 (90a:11130); ZB 647.12006.

[25] *Quaternion extensions* (with C. U. Jensen), in “Algebraic Geometry and Commutative Algebra” in Honor of Masayoshi Nagata (1987), pp. 155–182. Kinokuniya. MR0977759 (90a:12007); ZB 691.12011.

[26] *Polynomials with Frobenius groups of prime degree as Galois groups, II* (with A. Bruen and C. U. Jensen), J. Number Theory **24** (1986), pp. 305–359. MR0866976 (88f:12006); ZB 598.12009.

[27] *On certain arithmetical invariants of Fermat varieties*, J. Algebra **101** (1986), pp. 127–135. MR0843696 (87f:14008); ZB 593.14024.

[28] *The arithmetic of the product of two algebraic curves over finite fields*, J. Algebra **98** (1986), pp. 102–142. MR0825138 (87f:11042). *Correction*, J. Algebra **109** (1987), pp. 561. MR0902969 (89c:11102); ZB 622.14026.

[29] *Polynomials with Frobenius groups of prime degree as Galois groups I* (with A. Bruen and C.U. Jensen), C. R. Math. Rep. Acad. Sci. Canada **4** (1985), pp. 171–175. MR0789308 (86h:12002); ZB 569.12005.

[30] *On the product of two Fermat curves over finite fields*, C. R. Math. Rep. Acad. Sci. Canada **4** (1982), pp. 387–392. MR0681199 (83m:14016); ZB 508.14028.

[31] *A parametric family of quintic polynomials with Galois group D_5* (with G. Rolland and D. Zagier), J. Number Theory **15** (1982), pp. 137–142. MR0666353 (83i:12010); ZB 506.12011.

[32] *Polynomials with D_p as Galois group* (with C.U. Jensen), J. Number Theory **15** (1982), pp. 347–375. MR 840680538 (84g:12011); ZB 496.12004.

[33] *Polynomials with D_5 (resp. A_5) as Galois group* (with C.U. Jensen), C. R. Math. Rep. Acad. Sci. Canada **2** (1980), pp. 297–302. MR0600565 (82c:12009); ZB 451.12014.

[34] *On the Jacobian variety of the Fermat curve*, J. Algebra **65** (1980), pp. 1–35. MR0578793 (82m:14016); ZB 437.14015.

[35] *On the p -divisible groups arising from Fermat curves*, C.R. Math. Rep. Acad. Sci. Canada **1** (1978/79), pp. 191–194. MR0541457 (80k:14047); ZB 423.14029.

[36] *Elliptic curves and canonical subgroups of formal groups*, J. Reine Angew. Math. **303/304** (1978), pp. 319–331. MR0514689 (80c:14027); ZB 385.14012.

[37] *A note on formal groups and zeta-functions*, J. Reine Angew. Math. **303/304** (1978), pp. 159–169. MR0514678 (80c:14029); ZB 393.12021.

[38] *On the Jacobian varieties of hyperelliptic curves over fields of characteristic $p > 2$* , J. Algebra **52** (1978), pp. 376–410. MR0491717 (58 #10920), ZB 404.14008.

[39] *Explicit form of the modular equation*, J. Reine Angew. Math. **299/300** (1978), pp. 185–200. MR0476642 (57 #16201); ZB 368.14012. *Correction*, **301/302** (1978), pp. 70. MR0511694 (80b:10032); ZB 399.14022.

Other refereed publications (conference proceedings, book chapters, etc.):

[40] *Modularity/Automorphy of Calabi–Yau varieties of CM type*, Proceedings of Symposia in Pure Mathematics **96** (2017), pp. 265–297. American Mathematical Society. (The Proceedings of String-Math 2016, Sanya. MR3751821; ZB)

[41] *Elliptic Calabi–Yau threefold over a del Pezzo surface* (with S. Rose), Arbeitstagung Bonn 2013, In Memory of Friedrich Hirzebruch, Progress in Mathematics **319**, Birkhäuser 2016, pp. 337–354. MR3618056; ZB.

[42] *Quadratic twists of rigid Calabi–Yau threefolds over $\mathbf{Q}$* (with F. Gouvea and I. Kim-ing), in the Proc. *Arithmetic and Geometry of K3 surfaces and Calabi–Yau threefolds*, The Fields Institute Communications Series **67**, Springer 2013, pp. 517–533. arXiv:1111.5275. MR3156430; ZB 1302.14094.

[43] *On the modularity of Calabi–Yau varieties: 2011 and beyond*, in the Proc. *Arithmetic and Geometry of K3 surfaces and Calabi–Yau threefolds*, The Fields Institute Communications Series **67**, Springer, 2013, pp. 101–139. arXiv:1212.4308. MR3156414; ZB 1302.14005.

[44] *Mirror symmetry for elliptic curves: The A-model (fermionic) counting* (with Mike Roth), Clay Math. Proc. Vol **12**, (2010), pp. 245–283. MR2762533 (2012d:14094); ZB 1226.14067.

[45] *Fermat motives and mirror symmetry for Calabi–Yau hypersurfaces* (with S. Kadir), The Proceedings of the BIRS Proc. on *Modular Forms and String Duality*, Fields Institute Communication Series **54** (2008), pp. 3–47. American Mathematical Society. MR2454318 (2009j:14050) ; ZB 1167.14023.

[46] *Congruent number problems and their variants* (with J. Top), MSRI Monograph *Algorithmic Number Theory*, MSRI Publication Series **44** (2008), pp. 613–639. Cambridge University Press. MR2467591 (2009m:14033); ZB 1161.11014.

[47] *The L-series of Calabi–Yau orbifolds of CM type, Mirror Symmetry V*, The BIRS Proceedings on “Calabi–Yau Varieties and Mirror Symmetry”. Appendix by Y. Goto *The L-series of cubic hypersurface fourfolds*. AMS/IP Studies in Advanced Mathematics Series **38** (2006), pp. 185–252. MR2282961 (2008d:14039); ZB 1123.14023.

[48] *Update on the modularity of Calabi–Yau varieties, with Appendix by Helena Verrill*, Proceedings of the Fields Workshop on “Arithmetic, Geometry and Physics around Calabi–Yau Varieties and Mirror Symmetry”, Fields Communication Series Vol. **38**, American Mathematical Society 2003. pp. 307–362. MR2019160 (2005d:11098); ZB 1092.11030.

[49] *Arithmetic of certain Calabi–Yau varieties, and Mirror Symmetry*, IAS/Park City Mathematical Series Vol. **9** (2001), pp. 505–567. American Mathematical Society. MR1860046 (2003d:11093) ; ZB 1097.14033.

[50] *The arithmetic of certain Calabi–Yau varieties over number fields*, in The Proc. of the NATO ASI at Banff on “The Arithmetic and Geometry of Algebraic Cycles”, NATO Science Series Vol **548** (2000), pp. 515–560. Kluwer Academic Publisher. MR1744960 (2002b:14050); ZB 1023.14016.

[51] *Thompson series, and the mirror maps of pencils of $K3$ surfaces* (with H. Verrill), in “The Proc. of the Banff Meeting on “The Arithmetic and Geometry of Algebraic Cycles”, CRM Proceedings and Monograph Series **24** (2000), pp. 399–432. Amer. Math. Soc. MR1738869 (2001j:14050); ZB 996.14018.

[52] *The Monster, Thompson Series, and Applications*, in “Proceedings of the 41st Algebra Symposium, July 24–27, 1996, Yamagata University”, edited by Masao Koike, 1996, pp. 143–163.

[53] *Singular moduli of Thompson series* (with I. Chen), in “Groups, Difference Sets, and the Monster”, Proc. of the OSU Special Research Quarter, Spring 1993, Walter de Gruyter, Berlin – New York (1995), pp. 255–326. MR1400423 (98a:11051); ZB 918.11024.

[54] *Brauer numbers of twisted Fermat motives* (with F.Q. Gouvêa), Number Theory New York Seminar 1991–95, Springer–Verlag (1996), pp. 151–175. MR1340424 (97k:11094); ZB 867.11043.

[55] *Special values of zeta-functions of Fermat varieties over finite fields*, Number Theory, New York Seminars 1989–1990, Springer-Verlag (1991), pp. 251–275. MR1124645 (92i:11063); ZB 791.14009.

[56] *Explicit construction of the Hilbert class fields of imaginary quadratic fields by integer lattice reduction* (with E. Kaltofen), Number Theory, New York Seminars 1989–1990, Springer-Verlag (1991), pp. 149–202. MR1124640 (92j:11063); ZB 737.11034.

[57] *The arithmetic of certain algebraic surfaces over finite fields* (with N. Suwa), New York Number Theory Seminar, Lecture Notes in Mathematics **1383**, Springer-Verlag (1989), pp. 186–256. MR1023927 (90j:11053); ZB 701.14021.

[58] *An improved Las Vegas primality test* (with E. Kaltofen and T. Valente), in “Proc. ACM–SIGSAM 1989 ISAAC ’89”, Portland, Oregon (1989), pp. 26–33.

[59] *Jacobi quartics, Legendre polynomials and formal groups*, in “Elliptic Curves and Modular Forms in Algebraic Topology”, Lecture Notes in Mathematics **1326**, Springer-Verlag (1988), pp. 182–215. MR0970289 (91a:57021); ZB 696.14021.

[60] *The Brauer group of the product of two curves over a finite field*, in “Number Theory, New York 1983–84”, Lecture Notes in Mathematics **1135**, Springer-Verlag (1985), pp. 241–283. MR0803358 (87i:11079); ZB 565.14015.

[61] *Explicit construction of the Hilbert class fields of imaginary quadratic fields with class numbers 7 and 11* (with E. Kaltofen), in “EUROSAM ’84”, Lecture Notes in Computer Science **174**, Springer-Verlag (1984), pp. 310–320. MR0779136 (86h:11088); ZB 583.12007.

[62] *On the modular equation of order 11* (with E. Kaltofen), Proc. Third MACSYMA Users’ Conference, General Electric (1984), pp. 472–485.

[63] *Formal groups and some arithmetical properties of elliptic curves*, in “Algebraic Geometry (Proc. Summer Meeting University of Copenhagen 1978)”, Lecture Notes in Mathematics **732**, Springer-Verlag (1979), pp. 630–658. MR0555721 (80m:14027); ZB 414.14028.

Non-refereed publications (books, technical reports, reviews, etc.):

[64] *The work of Frey*, The Fields Institute Fermat Seminar (1993), (15 pages).

[65] *The Theory of Commutative Formal Groups and its Application to Arithmetical Algebraic Geometry*, Lecture Notes, Queen's University and Tsuda College (1990). (110 pages).

[66] *Elliptic Curves and Formal Groups of Dimension One*, Lecture Notes, Queen's University and Tsuda College (1989). (450 pages).

[67] *Introduction to the Theory of Modular Forms and its Application to Elementary Particle Physics I, II*, Lecture Notes University of Copenhagen 1977. (73 pages and 42 pages, respectively).

[68] Review on *A Course in p-Adic Analysis* by A. Robert. Bulletin of A.M.S. **39** (2002), pp. 113–119.

[69] Review on *Quaternion Orders, Quadratic Forms and Shimura Curves*, by M. Alsina and P. Bayer, CRM Lecture Notes and Monograph Vol. **24** (2003), for the Canadian Mathematical Society Notes Book Reviews.

[70] *Arithmetic of Calabi–Yau varieties*, Mathematisches Institut, Georg–August–Universität Göttingen: Seminars Summer Term 2004, Universitätsdrucke Göttingen, Göttingen 2004. pp. 9–29. MR2183123 (2007h:11050); ZB 1104.11019.

[71] Review on *Modular Calabi–Yau Threefolds*, by C. Meyer, Fields Institute Monograph Vol. **22** (2005), for the Canadian Mathematical Society Notes Book Reviews.

Editing books:

[72] *Advances in Number Theory* (The Proceedings of the third conference of the Canadian Number Theory Association 1991) (with F. Q. Gouvêa), xxiv + 535 pages, Oxford University Press 1993. MR1368406 (96g:11004); ZB 773.00021.

[73] *The Arithmetic and Geometry of Algebraic Cycles* (The Proceedings of NATO ASI, Banff, June 7–19, 1998) (with B. Gordon, J. Lewis, S. Müller-Stach and Shuji Saito), xxv+615 pages, NATO Science Series Vol **548**, Kluwer Academic Publishing, 2000. MR1746324 (2001b:14003); ZB 933.00032.

[74] *The Arithmetic and Geometry of Algebraic Cycles* (The Proceedings of CRM Summer School, Banff, June 7–19, 1998) (with B. Gordon, J. Lewis, S. Müller-Stach and Shuji Saito), xxv+424 pages, CRM Proceedings and Monograph Series Vol **24**, American Mathematical Society 2000. MR1736872 (2001b:14002); ZB 935.00034.

[75] *Calabi–Yau Varieties and Mirror Symmetry*, The Proceedings of the Fields Workshop, July 23–29, 2001) (with J. Lewis), The Fields Communication Series **38**, American Mathematical Society, October 2003. MR2019143 (2004f:14001); ZB 1022.00014.

[76] *Mirror Symmetry V*, The Proceedings of the BIRS Workshop on *Calabi–Yau Varieties and Mirror Symmetry*, December 6–11, 2003 (with James D. Lewis and S.-T. Yau), Advanced Studies in Mathematics Vol. **38**, American Mathematical Society/International Press, December 2006. MR2282005 (2007h:14002); ZB 1104.14001.

[77] *Modular Forms and String Duality*, The Proceedings of the BIRS Workshop on *Modular Forms and String Duality*, June 3–8, 2006 (with H. Verrill and C. Doran). Fields Institute Communications Series Vol. **54**, American Mathematical Society, October 2008. MR2478453 (2009i:11055); ZB 1147.11005.

[78] *Arithmetic and Geometry of K3 surfaces and Calabi–Yau threefolds*, (with R. Laza and M. Schütt), The Proc. of the workshop at the Fields Institute, August 2011. The Fields Institute Communication Series **67**, xxvi+602 pages. Springer, June 2013. MR3137679; ZB

[79] *Calabi–Yau Varieties: Arithmetic, Geometry and Physics: Introduction*, (with R. Laza and M. Schütt), The Lecture Notes of the Concentrated Graduate Courses at the Fields Institute, July–December 2013. The Fields Institute Monograph Series **Vol. 34**, x+547 pages. Springer 2015 MR3381844; ZB 1329.14008.

Papers accepted for publication in refereed journals/conference proceedings, but not yet appeared

[80] *Examples of Siegel paramodular Calabi–Yau threefolds over $\mathbb{Q}$* , for the Proceedings of the Bhaskara Pune India seminars on *Arithmetic and Geometry of Calabi–Yau Varieties*.

Papers submitted for publication in refereed journals/conference proceedings

[81] *Certain families of K3 surfaces and their modularity* (with A. Clinger, S. Kim and A. Malmendier).

Papers in preparation:

[82] *Modularity/Automorphy of four-dimensional Galois representations arising from certain Calabi–Yau threefolds* (with Ling Long and Yifan Yang).

[83] *Rank 4 weight 3 Calabi–Yau motives, and their modularity*.

[84] *Certain families of K3 surfaces over $\mathbb{Q}$ and their modularity* (with A. Clinger, S. Kim and A. Malmendier).

[85] *Intermediate Jacobians of rigid Calabi–Yau threefolds over $\mathbb{Q}$* (with I. Kiming).

[86] *Mirror maps for families of Calabi–Yau threefolds* (with L. Long and Y. Yang).

[87] *Mirror symmetry for elliptic curves : The B-modle (Bosonic) counting* (with Mike Roth).

[88] *Arithmetic Aspects of Calabi–Yau Varieties and Mirror Symmetry* (research monograph). (This monograph has been invited by S.-T. Yau to be published in International Press/American Mathematical Society).

[89] *The mirror maps of certain K3 surfaces and Thompson series* (with H. Verrill) (research monograph).

[90] *Formal groups and Calabi–Yau varieties* (with Y. Goto), a research monograph.

[91] *Generalized Hodge conjecture for certain Calabi–Yau threefolds* (with R. Ito), in preparation.

[92] *Potential modularity of Calabi–Yau threefolds of CM type* (with R. Ito), in preparation.

• My scientific contributions during my career, either alone or in collaboration, can be summarized as follows. My research direction and subjects may be divided into not necessarily disjoint following categories:

- (1) **Arithmetic of algebraic varieties in positive characteristic** (Ph.D. Thesis, [3],[4],[6],[8],[17],[18],[19],[21],[23],[27],[28],[30],[34],[35],[36],[37],[38],[40],[43],[45],[47],[48],[49],[50],[54],[55],[57],[60].)
- (2) **Arithmetic of algebraic varieties over number fields** ([3],[4],[5],[6],[7],[11],[12],[17],[20],[40],[41],[42],[43],[44],[45],[46],[47],[48],[49],[50],[51],[52],[70],[79],[80],[81],[82],[83],[84],[85],[86],[87],[88],[89],[90],[91],[92].)
- (3) **Arithmetic and geometry of surfaces and K3 surfaces** ([6],[7],[8],[10],[11],[17],[18],[50],[51],[57],[77],[78],[79],[80],[81],[89].)
- (4) **Arithmetic and geometry of Calabi–Yau varieties of dimension ≥ 3** ([3],[4],[5],[6],[9],[12],[17],[40],[41],[42],[43],[44],[45],[47],[48],[49],[50],[70],[71],[75],[76],[77],[78],[79],[80],[81],[82],[83],[84],[85],[86],[88],[91],[92].)
- (5) **Motives, and algebraic cycles** ([2],[3],[4],[6],[7],[12],[19],[21],[23],[27],[28],[30],[54],[55],[83],[91].)
- (6) **Zeta-functions and L -series, and their special values** ([2],[3],[4],[5],[6],[7],[12],[17],[21],[28],[30],[40],[43],[45],[47],[48],[49],[50],[55],[70],[79],[80],[81],[82],[83],[84],[85],[88],[91].)
- (7) **Formal groups and their applications** (Ph.D. Thesis, [2],[8],[18],[28],[34],[35],[36],[37],[38],[59],[60],[63],[65],[90].)
- (8) **Galois theory and the inverse Galois problem** ([1],[25],[26],[29],[31],[32],[33],[56].)
- (9) **Algebraic and analytic number theory** ([1],[2],[3],[4],[5],[6],[7],[8],[12],[13],[14],[15],[16],[19],[20],[21],[23],[24],[25],[26],[27],[28],[29],[30],[31],[32],[42],[43],[44],[45],[46],[47],[48],[49],[50],[51],[52],[53],[54],[55],[56],[57],[60],[61],[78],[79],[80],[81],[82],[85],[87].)
- (10) **Computational number theory** ([20],[39],[51],[52],[56],[58],[61],[62].)
- (11) **Algebraic topology** ([15],[16],[22],[59].)
- (12) **Mathematical physics, Mirror symmetry** ([3],[4],[6],[7],[8],[9],[22],[40],[44],[47],[48],[49],[50],[51],[75],[76],[77],[78],[79],[80],[86],[88],[89].)
- (13) **Research monographs** ([1],[2],[65],[66],[67],[88],[89],[90].)
- (14) **Books as an editor** ([72],[73],[74],[75],[76],[77],[78],[79].)
- (15) **Book review articles** ([69],[70],[71].)
- (16) **Expository papers** ([64],[65],[66],[67].)

CONTRIBUTIONS TO THE TRAINING OF HIGHLY QUALIFIED PERSONNEL

Supervising Postdoctoral Fellows:

- **Kamryn Spinelli** is currently a Coleman postdoctoral fellow at Queen's University, starting in July 2025. His appointment is for three years. He will be working under my supervision. We plan to collaborate on topics concerning periods of Calabi–Yau varieties (mainly K3 surfaces and Calabi–Yau threefolds).

- **Seoyoung Kim** is currently a postdoctoral fellow at University of Basel, Switzerland. During the period May–July 2024, she was a visiting postdoctoral fellow at Max-Planck Institute in Bonn working with me on our joint project: *Modularity of certain double sextic K3 surfaces over $\mathbb{Q}$* .

She was a Coleman postdoctoral fellow of Ram Murty at Queen's from September 2019 to June 2022.

- **Richard Gottesman** was a Coleman postdoctoral fellow from August 2018 to July 2021 under my supervision. He worked on vector-valued modular forms arising from modular linear differential equations. Currently, he has a teaching position(s) in the New York city.

- **Alex Molnar** was a Coleman postdoctoral at Queen's University from September 2016 to June 2017 under my supervision. He worked on arithmetic and geometry of Calabi–Yau threefolds, and intermediate Jacobians of Calabi–Yau threefolds. He now works in industry.

- **Simon Rose** was a Coleman Postdoctoral Fellow for six months from January to June 2014. He was a postdoctoral fellow at Max-Planck Institute at Bonn from August 2014 for a year. A joint paper with me [40] has been published in Arbeitstagung Bonn 2013 In Memory of F. Hirzebruch. He was a postdoctoral fellow at University of Copenhagen from 2015 for a year. Currently, he works at an IT company in Copenhagen.

- **Andrija Peruničić** was a postdoctoral fellow at Queen's University from January 2014 to June 2015. He worked on the arithmetic of Calabi–Yau varieties (K3 surfaces and Calabi–Yau threefolds) of BHK (Berglund–Hübisch–Krawitz) type. He now works in industry.

- **Sara A. Filippini** (Milano), **Michel van Garrell** (Caltech), **Peter Overholser** (San Diego), **Andrija Peruničić** (Brandeis), **Simon Rose** (Queen's), **Helge Ruddat** (Mainz) and **Alan Thompson** (Alberta) were the Fields Postdoctoral Fellows for the Thematic Program: Calabi–Yau Varieties: Arithmetic, Geometry and Physics for the period July–December 2013. She is now a professor at University of S .

- **Kensaku Kinjo** of University of Tokyo was a visiting postdoctoral fellow at Queen's University under my supervision for three months from December 2012 to March 2013. His supervisor at University of Tokyo is Dr. A. Shiho. He worked on hypergeometric series arising from K3 surfaces and Calabi–Yau threefolds. Currently, he is an assistant professor at Tokyo Agricultural University in Japan.

- **Simon Rose** of University of British Columbia was a Coleman Postdoctoral Fellow at Queen's University from July 2012 to June 2013. Rose has obtained his Ph.D. from UBC under the supervision of Jim Bryan. He works on Gromov–Witten theory for curves. While at Queen's, he started his work on Mirror Symmetry for Elliptic Curves (B-Model), and computing Gromov–Witten invariants on some Calabi–Yau threefolds.

• **Jeng-Daw Yu** of Harvard University was a Coleman Postdoctoral Fellow at Queen's University from August 2006 to May 2008. Yu obtained his Ph.D. from Harvard University under the supervision of S.-T. Yau. Yu's Ph.D. thesis was on ordinary $K3$ surfaces in characteristic p . At Queen's, we collaborated on arithmetic of $K3$ surfaces and Calabi–Yau threefolds in finite characteristic. In a joint paper [8], we established the Tate conjecture for the self-product of a $K3$ surface of finite height over finite fields. At ICCM 2007 in Hanzhou China, he was awarded a Silver Award for his Ph.D. thesis. From August 2008, he was an assistant professor, and from August 2014 was an associate professor at National Taiwan University, Taipei, Taiwan. In 2019 February, he was awarded an ICCM prize for young researchers, and from August 2019 he has been a full professor at National Taiwan University, Taipei, Taiwan.

• **Nam-Hoon Lee** of KIAS was a visiting postdoctoral fellow for two months (mid-October and mid-December 2006) at Queen's under my supervision. Lee obtained his Ph.D. from University of Michigan under the supervision of I. Dolgachev. His thesis was about a new construction of Calabi–Yau threefolds. At Queen's, we looked into arithmetic aspects of his Calabi–Yau threefolds. Currently he holds a position in Korea.

• **Remke Kloosterman** of University of Hannover was a visiting postdoctoral fellow for February–March 2006 at Queen's University. He held a postdoctoral fellowship at University of Hannover under the supervision of Klaus Hulek. He works on arithmetic of elliptic surfaces. At Queen's, we worked on a joint project of determining zeta-functions and L -series of one-parameter deformations of $K3$ -fibered Calabi–Yau threefolds [5]. From March 2009 til March 2016, he was a junior professor at Humboldt University in Berlin. Currently, he is an associate professor at Università degli Studi di Padova.

• **Michela Artebani** of University of Milano was a visiting postdoctoral fellow in November 2005 and February 2006 at Queen's University. She held a three years postdoctoral fellowship at University of Milano under the supervision of Bert van Geemen. Currently she holds a tenure-track position at University of Concepcion in Chile. She works on geometry and arithmetic of $K3$ surfaces.

• **Shabnam Kadir** of Oxford University pursued her postdoctoral studies at the Fields Institute under my supervision. She was a Fields Postdoctoral Fellow for the thematic program “The Geometry of String Theory”. Her tenure was for one year starting July 1st, 2004. Since September 2005, she was on a five year postdoctoral fellowship with Klaus Hulek at University of Hannover in Germany. A joint paper [45] with me has been published in the BIRS proceedings on *Modular Forms and String Duality*, the Fields Institute Communication Series Vol. 54 (2008).

Dr. Kadir obtained her Ph.D. at Oxford University under the supervision of Ph. Candelas and X. de la Ossa in 2004. Her thesis work was on arithmetic aspects of mirror symmetry on Calabi–Yau threefolds. In particular, she studied the consequences of mirror symmetry on zeta-functions and L -series of Calabi–Yau threefolds defined over $\mathbf{Q}$.

• **Yifan Yang** of National Chiao Tung University in Taiwan has been my research associates since 2004. He was a visiting researcher at Queen's University from August to December 2007. Since September 2009, he is a full professor at the same institution. In 2019, he moved to National Taiwan University in Taipei as a full professor. We have collaborated on differential equations arising from Calabi–Yau varieties of dimension 2 and 3. The articles [9] and [10] have appeared in publication. In [10] we computed differential equations satisfied by modular

forms of two variables and showed that they coincide with Picard–Fuchs differential equations of some K3 surfaces. In [9] we computed monodromy groups of certain one-parameter families of Calabi–Yau threefolds with $h^{1,1} = 1$ and showed that they are contained in the congruence subgroups of $Sp_4(\mathbb{Z})$. Currently we are working on the monodromy groups of Calabi–Yau equations. We are working on mirror maps for families of Calabi–Yau threefolds in [82], [86].

- **Robert Osburn** of McMaster University pursued postdoctoral studies at Queen’s University from July 2003 to June 2004 under my supervision. Originally, he was offered a two years postdoctoral fellowship at Queen’s. However, he was awarded a junior membership at Max-Planck Institute for Mathematics at Bonn from August 2004, and he spent nearly a year at that research institute. Osburn has taken up a permanent Lectureship at University College Dublin in Ireland from August 2005.

Dr. Osburn obtained Ph.D. from Louisiana State University under the supervision of J. Hurrelbrink in 2001. His thesis result was about the density of the 4-ranks of K_2 of the ring of algebraic integers of a number field. He was a postdoctoral fellow at McMaster University for two years with M. Kolster.

Dr. Osburn’s area of expertise is Algebraic and Computational Number Theory, and Algebraic K-theory.

- **N. Hamahata** of Tokyo University of Science pursued postdoctoral studies at Queen’s University under my supervision during the period September 2002 to August 2003. Dr. Hamahata obtained Ph.D. from University of Tokyo under the supervision of Takayuki Oda.

Dr. Hamahata’s area of expertise includes Hilbert modular Calabi–Yau threefolds and their arithmetic, automorphic forms. Currently, he is a full professor at Ritsumeikan University.

- **Arne Ledet** of University of Copenhagen pursued postdoctoral studies at Queen’s University under the joint supervision of Ram Murty and myself for nearly three years from 1997 til 2000. He was awarded an ARC Postdoctoral Fellowship from Queen’s University for two years starting from July 1997. He was a general member at MSRI for the special program *Inverse Galois Problem* from August to December 1999. He returned to Queen’s to resume his postdoctoral studies from January 2000 for a semester. From August to December 2000, Ledet held a general membership at MSRI for the special half year program *Algorithmic Number Theory*. From January 2001, Ledet was a postdoctoral fellow at Tokyo Metropolitan University in Japan for six months with T. Miyake and K. Hashimoto on the Inverse Galois Problem. From July 2001 for a year, Ledet was a postdoctoral fellow at University of Waterloo with C. Stewart. From September 2002, Ledet holds a tenure-track Assistant Professorship at Texas Tech. University. Ledet has been promoted to an Associate Professor with tenure at Texas Tech University in 2008.

Ledet obtained Ph.D. from University of Copenhagen under Christian U. Jensen in 1996. Dr. Ledet’s area of expertise is Algebraic Number Theory, especially, the Inverse Galois Problem. His earlier works were concentrated on the embedding problems with 2-groups as cyclic kernels. Recently, he has been working on the essential dimensions of finite groups in connection with finding generic polynomials with prescribed finite groups as Galois groups over fields of characteristic 0. He produced several papers during his ARC Postdoctoral fellowship: *Embedding problems and equivalence of quadratic forms*, Math. Scandinavica **88** (2001), pp. 279–302, *Generic polynomials with dihedral Galois groups*, Proc. of the A.M.S. **128** (2000), pp. 2213–2222. Dr. Ledet’s works have attracted considerable interest from S. Abhyankar (Purdue) and he was invited to Purdue University several times. A research monograph *Brauer*

Embedding Problems and the Inverse Galois Problem has been submitted for publication. A Research Monograph with C.U. Jensen and N. Yui on *Generic Polynomials: Constructive Aspects of the Inverse Galois Problem* [1] appeared in the MSRI Publication Series Vol. **45** from Cambridge University Press in December 2002. Ledet's recent paper produced at MSRI in the fall 2000: *On the essential dimensions of semi-direct products of cyclic groups* has appeared in the Canadian Mathematical Bulletin in 2002.

• **Ken-Ichiro Kimura** of University of Tokyo pursued postdoctoral studies at Queen's under my supervision for four months (September – December 1996), and again for two month in the summer of 1997. From April 2000 for two years, he was a visiting researcher at University of Chicago working with S. Bloch. Kimura held a general membership for a month in the fall of 2000 at MSRI in the program "Algorithmic Number Theory". Kimura obtained Ph.D. from University of Tokyo under Shuji Saito in 1995. He was awarded a JSPS Postdoctoral Fellowship. His postdoctoral studies at Queen's is supported by JSPS Fellowship. Since May 1997, he holds an assistant professorship at University of Tsukuba.

Dr. Kimura has been investigating properties of algebraic cycles of certain threefolds defined over number fields, with emphasis on the conjectures of Beilinson and Bloch. A paper entitled *An example of algebraic cycles with non-trivial Abel–Jacobi image* appeared from J. Algebra **222** (1999), pp. 129–145. Another paper *On modified diagonal cycle in the triple products of Fermat quotients* was drafted at Queen's and published in Math. Z. A paper *A remark on the Griffiths groups of certain product varieties* appeared in Proc. of the Banff Meeting on "The Arithmetic and Geometry of Algebraic Cycles" from the CRM Proceedings and Lecture Notes Series **24** (2000), pp. 361–365 from AMS.

• **Helena Verrill** of University of Cambridge pursued postdoctoral studies at Queen's for two years from April 1996 to May 1998 under my supervision. Verrill obtained her Ph.D. from University of Cambridge under N. Shepherd-Barron in 1994. She was awarded a Royal Society and JSPS Postdoctoral Fellowship, which she took to Kyoto University. She worked at Kyoto University from November 1994 to March 1996 under the supervision of K. Ueno. She arrived at Queen's in April 1996 for two years appointment. She held a postdoctoral fellowship at Max-Planck Institute in Bonn for a year from May 1998. From June 1998 til May 2001, she was a postdoctoral fellow at University of Copenhagen, working with I. Kiming. Verrill held a general membership for a month in the fall of 2000 in the program "Algorithmic Number Theory". From June 2001 to July 2002, she was a postdoctoral fellow at University of Hannover under K. Hulek, and from August 2002 to May 2003, she was a postdoctoral fellow at University of Essen under M. Levine. Verrill was a tenure-track Assistant professor at Louisiana State University in Baton Rouge til 2010. Since September 2010, she is at University of Warwick, UK.

Dr. Verrill has been working on arithmetic aspects of Picard–Fuchs differential equations, pencils of K3 surfaces and Calabi–Yau threefolds. A paper entitled *Root lattices and pencils of varieties* has appeared in J. Math. Kyoto Univ. **36**, No. 2 (1996), pp. 423–446. A short paper *Arithmetic of certain Calabi–Yau threefolds* appeared in the Proc. of CNTA-5, CRM Proceedings and Lecture Notes Series **19** (1999), pp. 333–340. A detailed version of this paper entitled *The L-series of certain rigid Calabi–Yau threefolds* was published in J. of Number Theory **81** (2000), 331–342. A paper *Thompson series, and the mirror maps of pencils of K3 surfaces* [51] co-authored with me appeared in the Proceeding of the Banff Meeting on "The Arithmetic and Geometry of Algebraic Cycles" CRM (Montreal) Proceedings and

Lecture Notes Series **24** (2000), pp. 399–432 from AMS. A research monograph with N. Yui entitled *The mirror maps of certain K3 surfaces and Thompson series* [89] is currently under preparation for publication in the AMS/IP Series of Advanced Mathematics and Physics edited by S.-T. Yau. She is also writing up a lecture note *Hypergeometric functions and configuration spaces* based on her graduate course at Queen’s in the fall term 1997. She is also interested in mathematical aspects of “Origami”.

- **Ian Kiming** of Institut für Experimentelle Mathematik, GHS Essen Germany pursued his postdoctoral studies at Queen’s from January 1995 for two months under my supervision. We worked on a project, *Maass cusp forms and even Galois representations*. A paper *On the number of p -spin blocks of defect zero for covering groups of symmetric groups* was written while his tenure at Queen’s. From November 1996 to December 2001, Dr. Kiming held a distinguished postdoctoral fellowship at University of Copenhagen, and in January 2002, he was promoted to an Associate professor with tenure at that institution. Since 2008, he is a full professor at the same institution. A joint paper on quadratic twists of rigid Calabi-Yau threefolds over $\mathbb{Q}$ [42] has appeared from the Fields Communication Series Vol. **67** in 2013.

- **Hiro-o Tokunaga** of Kochi University, Japan pursued postdoctoral studies at Queen’s under my supervision in 1992-93. Since April 2000, he was an associate professorship at Tokyo Metropolitan University in Japan. Since 2006, he is a full professor at that institution. Tokunaga obtained his Ph.D. from Kyoto University under K. Ueno in 1988. While at Queen’s, he has worked on dihedral Galois coverings of surfaces. The results have been prepared for publication: *On dihedral Galois coverings*, Canadian J. Math. **46** (6) (1994), pp. 1299–1317, and *Dihedral coverings branched along maximizing sextics*, Math. Annalen **308** (1997), no.3, pp.1935–1940.

- **Fernando Q. Gouvêa** of the University of São Paulo pursued postdoctoral studies at Queen’s University under my supervision in 1990-91. Gouvêa obtained his Ph.D. from Harvard under B. Mazur in 1988. He was an assistant professor at Colby College, Maine, USA from September 1991, and an associate professor from September 1994. Since September 2000, he is a full professor at Colby College. His research activities at Queen’s and also subsequent collaborations with me are summarized as follows:

Ranks of elliptic curves— The variation of the rank of the Mordell-Weil group in families of twists of an elliptic curve was investigated in several different ways. A paper, *The square-free sieve and the rank of Mordell-Weil* (with B. Mazur), has appeared in the Journal of A.M.S. **4** (1991), pp. 1-23. A second paper, *The square-free sieve over number fields*, appeared in J. Number Theory **43** (1993), pp. 109–122.

p -adic modular forms — Several issues related to p -adic modular forms and the p -adic deformation theory of certain Galois representations to which they are conjecturally associated were investigated. A paper, *Families of modular eigenforms* (with B. Mazur) appeared in Math. Computation **58** (1992), pp. 793-805. The second paper on the subject, *On the characteristic power series of the U operator* (with B. Mazur), was published in Ann. L’Institut Fourier **42** (1993), pp. 301–312.

Arithmetic of diagonal hypersurfaces — Diagonal hypersurfaces are a convenient testing ground for conjectures, such as the conjectures of Artin–Tate and Milne–Lichtenbaum (and Beilinson). A research monograph *The arithmetic of diagonal hypersurfaces over finite fields* [2], and a paper [54] on the subject and related topics were co-authored with me and were

published. In the paper [19], the previous results have been extended to Fermat motives of $K3$ type.

P-adic Numbers: An Introduction — A book was prepared for publication. This book has since appeared in the Universitext series from Springer–Verlag (1993), and the second edition has appeared in 1997.

The modularity of rigid Calabi–Yau threefolds over $\mathbf{Q}$ [5], written jointly with me, has appeared in *Expositions Math.* in 2011. Another joint article with I. Kiming and I on quadratic twists of rigid Calabi–Yau threefolds [42] has appeared from the Fields Communication Series Vol. **67** in 2013.

- **Jaap Top** of the University of Utrecht pursued postdoctoral study at Queen’s University under my supervision in 1989–90. Currently he is a full professor at University of Groningen. Recently, Top and I have started collaboration on *Congruent number problem and its variants* [46], and on explicit determination of defining equations of some elliptic modular surfaces [11].

Top obtained Ph.D. from Utrecht under F. Oort in 1989. He held an assistant professorship at Erasmus University in 1990–92, and currently a full Professor at the University of Groningen. His research activities at Queen’s are described as follows: Two papers were published, *Cusp forms of weight two for the group $\Gamma_2(4, 8)$* (with Scivati–Manni), *Amer. J. Math.* **115** (1993), pp. 455–486, and *Permutation polynomials, real multiplication and hyperelliptic curves* (with W. Tautz and A. Verberknoes), *Canadian J. Math.* **43** (1991), pp. 1055–1064. Top also collaborated with Cameron Stewart (Waterloo), and a paper, *Constructing many twists of an elliptic curve with high rank*, has been published in *Journal of AMS*, **8** (1995), pp. 943–973.

- **Noriyuki Suwa** of Tokyo Denki University pursued postdoctoral studies under my supervision in 1987 at Toronto, and in 1988 at Queen’s. Suwa obtained his Ph.D. from Université de Paris–Sud in 1987 under L. Illusie. He held position as assistant and then associate professor at Tokyo Denki University from 1987. Since 1998, he is a professor at Chuo University. Several papers were written jointly with me during his visits: *Arithmetic of Fermat varieties I*, MSRI Preprint 1988, *Arithmetic of certain algebraic surfaces over finite fields*, *Number Theory*, New York, *Lecture Notes in Mathematics* **1383**, Springer–Verlag (1989), pp. 186–256 [57].

- **Richard Sarkisian** of City College, CUNY pursued postdoctoral studies at University of Toronto under my supervision in 1984–86. Sarkisian obtained his Ph.D. from CUNY in 1984 under R. Hoobler and he now works at the US Government. Several papers were published : *Exponential sums and forms for varieties over finite fields*, *Proc. AMS* **95** (1985), pp. 372–374, and *Weil numbers and forms for abelian varieties over finite fields* (preprint) (1985).

Supervising Ph.D. Students:

- **Rikuto Ito** was a Ph.D. student at Nagoya University in Japan under the supervision of Professor Sho Tanimoto. Since 2024, Ito has been supervised jointly by me. He visited Queen’s University for two months in 2024 and 2025 as a visiting Ph.D. students supported by my NSERC grant. Currently, he is an Assistant Professor at National Institute of Technology, Gumma College, Japan. He works on modularity of Calabi–Yau, and Fano varieties of complex multiplication (CM) type.

- **Alex Molnar** was a Ph.D. student at Queen’s University under my supervision. He started his Ph.D. studies in September 2011, and obtained his Ph.D. in August 2015. His Ph.D. thesis was entitled: *Arithmetic and Intermediate Jacobians of Calabi–Yau Threefolds*.

- **Swantje Gähns** of University of Hannover was a visiting Ph.D. student for three months based at the Fields Institute in the fall of 2010. She was a Ph.D. student at University of Hannover under the supervision of Dr. Wolfgang Ebeling. She defended her Ph.D. thesis in the fall of 2011 and obtained her Ph.D. degree from University of Hannover. During her visit to the Fields, she was co-supervised by Dr. R. Buchweitz and myself. She worked on Picard–Fuchs differential equations of one-parameter families of K3 surfaces. The article based on her Ph.D. thesis entitled *Picard–Fuchs differential equations of invertible polynomials* has appeared in the Proceedings of the summer school “Arithmetic and Geometry of K3 surfaces and Calabi–Yau threefolds” from the Fields Institute Communication Series Vol. **67** in 2013.

- **Alice Garbarnati** of University of Milano was a visiting graduate student from October 28 til November 5, 2007. She is a Ph.D. student at University of Milano under the supervision of Bert van Geemen. She works on K3 surfaces. She is now a postdoctoral fellow at University of Milan.

- **Chiao-Hun Chen** of National Chiao Tung University of Taiwan was a visiting graduate student from the middle of September to the end of December 2007. He is a Ph.D. student in Taiwan working under the supervision of Yifan Yang. He works on the theory of modular forms and analytic number theory.

- **Ronald van Luijk** of University of California, Berkeley was jointly supervised by me and Hendrik Lenstra of University of Leiden. He works on arithmetic aspects of algebraic surfaces, e.g., elliptic and K3 surfaces, more specifically, he reformulates some diophantine problems in terms of algebraic surfaces. In the article *An elliptic K3 surface associated to Heron triangles*, he gives the infinitude of Heron triangles reducing it to arithmetic question of some elliptic K3 surface. Similarly, in the paper *A non-Kummer singular K3 surface associated to symmetric integral 3×3 matrices with integral eigenvalues*, he shows that there are infinitely many symmetric integral matrices of order 3 with zeros on the diagonal, whose eigenvalues are integral. This is done by proving that rational points on a non-Kummer singular K3 surface associated to these matrices are dense. He now holds a position (tenure-stream) at University of Leiden.

- **Ling Long** of Pennsylvania State University spent the fall semester of 1999 at Queen’s University as a visiting Ph.D. student of mine. Long completed her Ph.D. thesis (*Modularity of elliptic surfaces*) under my supervision, which she defended in April 2002. She served as my research assistant on the project “Arithmetic of Calabi–Yau varieties over number fields”. During her stay at Queen’s, she worked on arithmetic aspects of elliptic surfaces. In particular, she determined the L -functions of surfaces. In the fall of 2000, Ling was a visiting Ph.D. student of mine at MSRI for the program “Algorithmic Number Theory”. She worked on *t -congruent number problems and elliptic surfaces*. The paper entitled *L -series of certain elliptic surfaces* has been accepted for publication in the Canadian Mathematical Bulletin. The article *On Shioda–Inose structure of a family of K3 surfaces* will appear in the Proceedings of the Fields Workshop “Calabi–Yau Varieties and Mirror Symmetry”, and the detailed version of this paper has been submitted for publication. Several papers on mirror maps of Calabi–Yau threefolds are under preparation with me, e.g., [82],[86]. The paper [3] was co-authored with me. From September 2002 to June 2003, Dr. Long held a postdoctoral fellowship at Institute for Advanced Study in Princeton. From July 2003, she was a tenure-track assistant professor at Iowa State University. In 2010, she was tenured as an associate professor at the same

institution. In 2013 she has moved to a tenured associate professorship at Louisiana State University, and since 2019, she is a full professor at Louisiana State University.

• **Yasuhiro Goto** obtained Ph.D. from Queen's in September 1994. He held a postdoctoral fellowship at University of Toronto Erindale College in 1994–1995, and at Academia Sinica for three months (May–July, 1995) under S. Roan. He was a postdoctoral fellow at Max-Planck-Institut für Mathematik Bonn under the supervision of D. Zagier for a year from September 1995. From October 1996 to March 1997, he pursued postdoctoral studies at the Tata Institute for Fundamental Research in Bombay, India. From April 1997 to March 1999, Goto held a postdoctoral fellowship at RIMS, Kyoto University. He was a postdoctoral fellow at IHES for a couple of months from September 1997. Goto was an associate professor at Hokkaido University of Education at Hakodate from April 1999, and a full professor at the same institution from April 2010.

In recent years, geometry and topology of weighted projective varieties have been extensively investigated by many geometers. However, arithmetic properties of such varieties are yet to be investigated. Taking in a suggestion of K. Ueno, Goto has been working on the arithmetic of weighted projective surfaces in positive characteristic. In the Ph.D. thesis entitled *Arithmetic of weighted diagonal surfaces and weighted deformed diagonal surfaces over finite fields*, he proved the Tate conjecture for weighted diagonal K3 surfaces and also for weighted deformed diagonal K3 surfaces over finite fields. Further he computed the Picard numbers, the Néron-Severi groups and the order of Brauer groups for such surfaces. The results were prepared for publication in the three papers: *On quotient surfaces in weighted projective spaces over finite fields* (the Fields Institute Preprint Series Vol. FI93-LF02), *Arithmetic of weighted projective surfaces over finite fields*, J. Number Theory **59** (1) (1996), pp. 37–81, and *Computations of the orders of Brauer groups of some weighted deformed diagonal surfaces* in Proc. CNTA4 conference at Halifax, CMS Conference Series **15** (1995), pp. 175–186.

For the number fields case, we (Goto and myself) have been investigating arithmetic of weighted diagonal K3 surfaces defined over number fields, and that of their mirror partners.

Dr. Goto has also constructed K3 surfaces with big Artin invariant (e.g., 10) in a paper *The Artin invariant of supersingular weighted Delsarte surfaces*, J. Math. Kyoto Univ. **36** (1996), pp. 359–363.

Dr. Goto has been investigating arithmetic properties of mirror pairs of K3 surfaces, especially, of supersingular K3 surfaces defined over finite fields. Currently, several joint papers with me are under preparation, e.g., *On the Brauer numbers of weighted diagonal and quasi-diagonal hypersurfaces over finite fields* is under preparation. A paper *On the Néron–Severi groups of some K3 surfaces* appeared in the Proc. of the Banff Meeting on “The Arithmetic and Geometry of Algebraic Cycles” from the CRM Proceedings and Lecture Notes Series **24** (2000), pp. 305–328 from the American Mathematical Society.

A joint project Goto and I, together with Kloosterman, on zeta-functions and L-series of K3 fibered Calabi–Yau threefolds over $\mathbb{Q}$ [6] has appeared in print. Another joint article with Goto and Livne [4] on the automorphy of Calabi–Yau threefolds of Borcea–Voisin type has appeared in the Communications in Number Theory and Physics Vol. 7, No. 4 (2013), pp. 581–670. A current joint project with me is the research monograph [90] on formal groups and Calabi–Yau manifolds.

• **Ira Helsloot** obtained his Ph.D. from Free University of Amsterdam in 1994 under the joint supervision of B. Ditters and me. In the thesis entitled *Covariant formal group theory*

and some applications, he determined the structure of the formal Brauer groups arising from Fermat hypersurfaces of dimension two. Specifically, the novelty of his thesis was the structure theorem for the unipotent part of the formal Brauer groups.

- **Thomas Valente** obtained his Ph.D. from Rensselaer Polytechnic Institute in 1992 under the joint supervision of E. Kaltofen and me. In his Ph.D. Thesis, he improved the elliptic curve primality testing using a theory developed by Kaltofen and myself. He had a one-year position at Colby College in 1993, and since September 1993, he holds a tenure-track position at a liberal art college in Virginia.

- **Walter Tautz** obtained his Ph.D. from Queen's University in 1990 under my supervision. Tautz was an assistant professor at the University of Saskatchewan during the academic year 1990–91, and he spent about 3 months as a postdoctoral fellow at Experimentelle Institut für Mathematik, Essen in Germany under G. Frey. Tautz's thesis was titled *Reductions of Abelian varieties over number fields and supersingular primes*, and in this he generalized a theorem of Elkies on the infinitude of supersingular primes on elliptic curves to certain abelian varieties of CM type. Two papers from the thesis were prepared for publication: *Permutation polynomials, real multiplication and hyperelliptic curves* (with J. Top and A. Verberknoes), Canadian J. Math. **43** (1991), pp. 1055–1064 and *Slopes of Frobenius of a CM abelian variety*, preprint.

- **Kristin Lauter** obtained her Ph.D. in June 1996 from University of Chicago under the supervision of Niels Nyggard. She held postdoctoral positions at University of Michigan, and at Max–Planck–Institut für Mathematik. Currently, she holds a permanent position at Microsoft. She was a visiting Ph.D. student at Queen's in February 1995 working on algebraic codes arising from supersingular $K3$ surfaces.

Supervising Master's Students:

- **Dominic Austria** obtained his Project Master's degree in October in 2023 from Queen's University. The title of his Project was *Congruent numbers and Tunnell's theorem*.

- **Andrew Harder** obtained his Thesis Master's degree in August 2011 from Queen's University. He started his graduate studies in September 2009 at Queen's University under my supervision. His Master's Thesis entitled *Moduli spaces of $K3$ surfaces with large Picard number* was defended in August 2011. In his thesis, he constructed a family of lattice polarized $K3$ surfaces with Picard number 17 having a specific Neron–Severi lattice, and studied its deformations. From September 2011, he was a Ph.D. student at University of Alberta working under the supervision of Charles Doran. He defended his Ph.D. thesis in January 2016 and was a Simons PDF at University of Miami under the mentorship of L. Katzurkov and M. Konstantin, til the end of 2018. From January 2019, he has been an Assistant Professor at Lehigh University. Currently, he has been considered for tenure at that institution.

- **Matthew Ingle** obtained his Master's degree from Queen's University in September 2009. He worked under my supervision, on number theoretic aspects of mirror symmetry, Calabi–Yau varieties and modular forms, and Galois representations associated to Calabi–Yau manifolds. His master's project was entitled *Quasimodularity and counting covers of an elliptic curve*. After Queen's he went to do Ph.D. at University of Toronto, but after a year, he moved to a different subject.

- **Peter Zion** obtained the degree of M.Sc. in February 1998 from University of Toronto. He spent the fall term of 1997 taking a project course with me at Queen's on *Coding and Algebraic Geometry*. For a short period, he worked with a computer company in Kingston, but now he is somewhere in the Silicon Valley, California.

- **Timothy Hutchinson** obtained the degree of M.Sc. in July 1996 from Queen's University under my supervision. He wrote Master's thesis entitled *Singular Moduli of Level One: The Gross-Zagier formula*. A paper based on his thesis has appeared in Tokyo J. Mathematics **21** (1998), pp. 255–265. After his degree from Queen's, he has worked for the degree of M.Sc. in Information (Archives and Records Management) at University of Michigan, obtaining the degree in August 1997. From September 1997, he has a tenured position as an Archivist at University of Saskatchewan.

- **Scott Todd** obtained the degree of M.Sc. from Queen's University in September 1996. Under my supervision, he wrote a Master's Project *The rank of an elliptic curve*. Currently he teaches Mathematics in Malaysia.

- **Walter Tautz** obtained the degree of M.Sc. from the University of Toronto under my supervision in 1987.

- **Paul Wong** obtained the degree of M.Sc. from the University of Toronto under my supervision in 1985.

- **Heinz Thomas** finished his Diplomarbeit at Saarbrücken under the joint supervision of G. Frey and myself in 1982.

Supervising Fields-Mitac Undergraduate Summer Research Students:

- **Ravindranath, Awswath** (Princeton), **Espinosa-Lara, Malors** (CIMAT, Mexico), and **Peter JunHo Whang** (Queen's) were the undergraduate summer research students at the Fields Institute for July and August 2013. They worked, under my supervision, on the project: Modular forms in string theory, in particular, on arithmetic of Calabi-Yau threefolds of Borcea-Voisin type. Peter JunHo Whang went to Princeton University for the graduate work, obtaining his Ph.D. in 2018. Since September 2018, he is a Moore Instructor at MIT. Espinosa-Lara Malors is currently a Ph.D. student at University of Toronto.

Supervising NSERC Summer Research Students:

- **Victoria de Quehen** worked in 2003 on summer research project at Queen's University under my supervision, supported by the Summer Research Award (USRA). She worked on the project *Congruent number problem and its variants*.

- **Imin Chen** of Queen's University worked in 1991 on summer research projects at Queen's and at Rensselaer Polytechnic Institute under the joint supervision of E. Kaltofen and myself. He was again awarded an NSERC Summer Research Award in 1992 at Queen's. He worked on the singular values of Thompson series arising from the representation of the Monster. The results of the summer project is culminated in paper [51] co-authored with me. He was awarded the Governor Generals Silver Medal, Prince of Wales Medal and Mathematics Gold Medal on his graduation from Queen's in 1992. He had been working for his Ph.D. at University of Oxford under the supervision of B. Birch. Chen obtained the degree of D. Phil. from Oxford in July, 1996. Currently, Chen is an NSERC Postdoctoral Fellow at University of California at Berkeley (1996–1997), and at McGill University (1997–1999). He will be a postdoctoral

fellow at Max–Planck–Institut für Mathematik from January 2000 for eight months. Since September 2000, Chen held a position of an assistant professorship (tenure-stream), and now a tenured associate professor at Department of Mathematics, Simon Fraser University, British Columbia, Canada.

Supervising Exchange Students from Tsuda College:

- Tsuda College in Japan and Queen’s University signed an exchange program in 1995, however, the program got terminated in 2011, and replaced by the new exchange program: **The Canada-Japan Academic Consortium Exchange Program.**

Under the exchange program, **Minatsu Yamaji, Rie Takagi, Hiroko Tachii, Yuki Aikawa, Mie Sato, Makiko Suzuki, Kazuyo Inoue, Kayo Shichino, Mistuko Homma, Chizuru Sekine, Akiko Manada, Eli Mikami, Akiko Kawamura** of Tsuda College came to Queen’s University from three months to a year. I supervised Yamaji, Takagi, Aikawa, Inoue, and Sekine while they were at Queen’s. Subsequently, Ms. Yamaji was a Master’s student at McGill University, obtaining Master’s degree in 1996 under the supervision of Ram Murty. Ms. Sekine was also supervised by Ram Murty (a faculty member at Queen’s since 1996). Ms. Akiko Manada was accepted as a regular Ph.D. student at Queen’s and she obtained her Ph.D. in 2009. After a postdoctoral experience at University College Dublin, Ireland, she is now an assistant professor at Electro-Communications University in Tokyo. I also supervised Ms. Kawamura for her Master’s thesis from September 2006.

- **Suzanne Findleton** of Queen’s University (Mathematics) was an exchange student at Tsuda College from April to July 2013. She studied algebraic topology with Professor Kuno, and Knot theory with Professors Fukuhara and Miyazawa at Tsuda College. **Banafsheh Salimi** of Queen’s University (Computing Sciences) was an exchange student at Tsuda College from September 2007 to January 2008. She studied computer science and Japanese at Tsuda College.

Serving as an Examiner

- Project Master’s Thesis Defense, Dominic Austria, Queen’s University, September 2023.
- Ph.D. Thesis Defense, Daniel Muroz George, Queen’s University, May 2023:
Head’s Delegate
- Ph.D. Thesis Defense, Isra Alshbeil, University of Ottawa, May 2020:
External Examiner
- Ph.D. Thesis Defense, Alex Molnar, Queen’s University, August 27, 2015:
Supervisor
- Ph.D. Thesis Defense, Zhihua Chang, University of Alberta, August 2013:
External Examiner
- Master’s Thesis Defense, Andrew Harder, Queen’s University, August 10, 2011:
Supervisor

- Ph.D. Thesis Defense, Abdelkrim El Basraoui, University of Ottawa, August 16, 2010:
External Examiner
- Ph.D. Thesis Defense, Jonas Rasmussen, University of Copenhagen, November 20, 2009:
External Examiner
- Master's Project, Matthew Ingle, Queen's University, September 3, 2009: Supervisor
- Ph.D. Thesis Defense, David Brink, University of Copenhagen, February 2006:
External Examiner
- Ph.D. Thesis Defense, Tommy Bülow, University of Copenhagen, December 10, 2004:
External Examiner
- Ph.D. Thesis Defense, Ling Long, Pennsylvania State University, April 11, 2002:
External Examiner
- Ph.D. Comprehensive Examination, Ling Long, Pennsylvania State University, February 2000: Special Examiner
- Master's Project, Filip Saidak, Queen's University, December 1998: Examiner
- Master's Thesis, Yu-Ru Liu, Queen's University, July 1998: Examiner
- Master's Thesis, Satya Mohit, Queen's University, June 1998: Examiner
- Master's Project, Scott Todd, Queen's University, September 1996: Supervisor
- Master's Thesis, Timothy Hutchinson, Queen's University, July 1996: Supervisor
- Ph.D. Thesis, Yasuhiro Goto, Queen's University, August 1994: Supervisor
- Ph.D. Thesis, Ira Helsloot, Free University, Amsterdam 1994:
Member (External Referee) of the Examination Board
- Ph.D. Thesis, Thomas Valente, Rensselaer Polytechnic Institute, August 1992:
External Examiner
- Ph.D. Thesis, Walter Tautz, Queen's University, August 1990: Supervisor
- Ph.D. Thesis, Andrew Granville, Queen's University, August 1987:
Member of the Examining Committee
- Ph.D. Thesis, S. Kim, University of Toronto, October 1986: Member of
the Examining Committee
- Master's Thesis, Walter Tautz, University of Toronto, August 1987
- Master's Thesis, Paul Wong, University of Toronto, August 1986

I also served as an examiner for a number of Ph.D. candidacy examinations

INVITED ADDRESSES

All talks are for one hour unless otherwise stated.

I. Colloquia:**2024**

- University of Mainz, Germany, July 18, 2024: *Certain families of K3 surfaces and their modularity.* (90 minutes)

2023

- Queen's University, January 18, 2023: *Modularity of Calabi–Yau threefolds of Hodge type $(1, 1, 1, 1)$.*

2019

- Tsuda University, July 26, 2019: *Modularity of Calabi–Yau varieties.*
- Max-Planck Institute for Mathematics (MPIM) Bonn, Oberseminar, June 27, 2019: *Siegel modularity of certain Calabi–Yau threefolds over $\mathbb{Q}$.*
- PIMS Hugh Morris Lecture, University of Saskatchewan, April 25, 2019: *Modularity of Calabi–Yau varieties.*
- OIST Colloquium, February 2019 : *Modularity of Calabi–Yau Manifolds.*

2017

- University of Mainz SFB Colloquium, May 11, 2017: *Modularity/Automorphy of Calabi–Yau varieties of CM type.*

2016

- CIMAT, Guanajuato, Mexico, April 18, 2016: *Enumerative geometry and quasimodular forms.*
- Universidad Autonoma, Mexico City, Mexico, April 15, 2016: *Calabi–Yau Varieties: Arithmetic, Geometry and Physics,*

2015

- University of Mainz, May 21, 2015: *Modularity/Automorphy of Calabi–Yau varieties over $\mathbb{Q}$ of dimension ≤ 3*

2014

- Tsukuba University, July 17, 2014 : *Modularity/Automorphy of Calabi–Yau manifolds of dimension ≤ 3 .*
- Tsuda College, July 10, 2014 : *Modularity/Automorphy of Calabi–Yau varieties over $\mathbb{Q}$.*

2012

- University of Tsukuba, July 19, 2012 : *Modularity of Calabi–Yau varieties over the rationals.*
- Tsuda College, June 6, 2012 : *The modularity of Calabi–Yau varieties over $\mathbb{Q}$.*

2011

- Louisiana State University, February 24, 2011 : *The modularity of Calabi–Yau varieties over $\mathbb{Q}$.*

2010

- University of Western Ontario, November 25, 2010: *The modularity of Calabi-Yau varieties over $\mathbf{Q}$.*
- Queen's University, October 8, 2010: *The modularity of Calabi-Yau varieties over the rationals*
- University of Hannover, June 14, 2010: *Mirror symmetry for elliptic curves.*

2009

- University of Copenhagen, November 17, 2009: *Mirror symmetry for elliptic curves.*
- Tsukuba University, June 9, 2009 : *Mirror symmetry for elliptic curves* (1 & 1/2 hrs.)
- Tsuda College, Tokyo, Japan, June 3, 2009 : *The modularity of K3 surfaces with non-symplectic group actions* (1 & 1/2 hrs.)

2007

- Hokkaido University of Education Hakodate, August 28, 2007: *Mirror symmetry for elliptic curves* (1 & 1/2 hrs.)

2006

- Kyoto University, August 16, 2006: *Motives, Mirror Symmetry and Modularity* (1 & 1/2 hrs.)
- Hokkaido University of Education, Hakodate, July 26, 2006: *Congruent number problem.*
- University of Copenhagen, February 21, 2006: *Motives and mirror symmetry.*

2005

- Hokkaido University, May 30, 2005: *Arithmetic aspects of Calabi-Yau varieties and mirror symmetry.*
- Tsuda College, May 25, 2005: *Modular forms and their applications to mirror symmetry.*
- Tsukuba University, May 24, 2005: *Arithmetic Aspects of Calabi-Yau varieties and mirror symmetry*

2004

- University of Copenhagen, September 7, 2004: *The modularity of Calabi-Yau varieties.*
- Tsuda College, July 23, 2004: *Arithmetic Aspects of Calabi-Yau Varieties and Mirror Symmetry* (1 & 1/2 hrs.).
- University of Saarbrücken, May 28, 2004: *Arithmetic of Calabi-Yau Varieties and Mirror Symmetry.*
- University of Hannover, April 20, 2004: *Arithmetic Aspects of Calabi-Yau Varieties and Mirror Symmetry.*
- University of Utrecht, March 4, 2004: *Calabi-Yau varieties and modular forms.*
- University of Leiden, Kloosterman Lecture, February 5, 2004: *Arithmetic Aspects of Calabi-Yau Varieties and Mirror Symmetry.*

2002

- University of Alberta, November 7, 2002: *The modularity questions of Calabi-Yau varieties.*
- Tsuda College, August 8, 2002: *Update on the modularity of Calabi-Yau varieties.*
- University of Saarland, June 7: *The modularity of rigid Calabi-Yau threefolds over $\mathbf{Q}$.*
- University of Sheffield, May 22 2002: *Mirror moonshine phenomenon.*

2001

- University of Alberta, November 2, 2001: *The congruent number problems in dimensions 1 and 2.*
- Queen's University, September 21, 2001: *The congruent number problems in dimensions 1 and 2.*
- Univeristy of Barcelona, March 14, 2001: *The congruent number problems in dimensions 1 and 2.*
- University of Bordeaux, February 16, 2001: *The modularity conjecture of rigid Calabi–Yau threefolds over $\mathbb{Q}$.*

2000

- University of Arizona, November 10, 2000 *Arithmetic of Calabi–Yau varieties and mirror symmetry.*
- University of Arizona, November 9, 2000 *The modularity conjecture for rigid Calabi–Yau threefolds over $\mathbb{Q}$.*
- University of Alberta, Oct. 26, 2000 *The modularity conjecture for rigid Calabi–Yau varieties over $\mathbb{Q}$.*
- Tôhoku University, May 29, 2000 *Zeta-functions of Calabi–Yau varieties and modularity conjectures.* (2 hrs.).
- Chiba University, May 17, 2000 *Diophantine equations.*
- Tsuda College, May 9, 2000: *The modularity conjectures for Calabi–Yau varieties.*

1998

- Tsuda College, October 30, 1998: *Arithmetic aspects of Calabi–Yau varieties and mirror symmetry.*
- University of Western Ontario, September 30, 1998 : *Moonshine and mirror maps of certain $K3$ surfaces.*
- University of Oklahoma, Norma, Oklahoma, February 19, 1998: *Arithmetic of certain Calabi–Yau type varieties and their mirrors.*
- Purdue University, West Lafayette, Indiana, January 27, 1998: *The arithmetic of certain Calabi–Yau type varieties and their mirrors.*

1997

- Universität des Saarlandes, June 16, 1997: *The arithmetic of certain Calabi–Yau threefolds: The L -series*
- University of Alberta, Edmonton, Canada, January 30, 1997: *Arithmetic of certain Calabi–Yau type varieties over number fields.*

1996

- Tôhoku University, Sendai, Japan, July 22, 1996: *Arithmetic of Calabi–Yau type varieties over number fields.*
- Tsuda College, July 19, 1996: *Mirror images of certain Calabi–Yau type varieties.*

1995

- Tsuda College, July 18, 1995 : *Arithmetic of Calabi–Yau type varieties.*
- University of Tokyo, Algebra Colloquium, July 12, 1995 : *Arithmetic of Calabi–Yau type varieties.*

1993

- Tsuda College, November 5, 1993: *Brauer numbers associated to diagonal hypersurfaces*
- University of Saarbrücken, May 1993: *Arithmetic of diagonal hypersurfaces over finite fields.*

- University of Utrecht, March 1993: *Brauer numbers associated to diagonal hypersurfaces.*

1992

- City College, CUNY, November 1992: *Monstrous moonshine and singular values of Thompson series.*
- Hokkaido University, June 1992: *Arithmetic of diagonal hypersurfaces.*
- Tsuda College, May 1992: *Monstrous moonshine and monstrous class fields.*

1991

- University College of Swansea, June 1991: *Arithmetic of diagonal hypersurfaces .*
- University of Manchester, June 1991: *Diagonal hypersurfaces.*
- Dalhousie University, February 1991: *Arithmetic of diagonal hypersurfaces.*

1990

- Kochi University, August 1990: *Special values of zeta-functions of Fermat varieties over finite fields.*
- Institut für Experimentelle Mathematik, GHS Essen, June 1990: *Values of zeta-functions of diagonal hypersurfaces over finite fields.*

1989

- Tsuda College, May 1989: *Hilbert class fields of imaginary quadratic fields and primality testing.*

1988

- University of Copenhagen, December 1988: *Fermat varieties.*
- Universität des Saarlandes, December 1988: *Fermat motives and Jacobi sums.*
- Max-Planck-Institut für Mathematik Bonn, December 1988: *Arithmetic of Fermat varieties.*
- Tôhoku University, June 1988: *Arithmetic of Fermat varieties.*
- Tsuda College, June 1988: *Fermat motives.*
- Ochanomizu University, May 1988: *Jacobi sums and Fermat varieties.*

1987

- City College, CUNY, October 1987: *Recent results on the general inverse problem of Galois Theory.*
- Queen's University, February 1987: *A constructive aspect of the inverse Galois problem.*
- McMaster University, January 1987: *A constructive aspect of the inverse Galois problem.*

1986

- Tsuda College, June 1986: *The inverse problem of Galois Theory.*
- Saitama University, June 1986: *The inverse problem of Galois Theory.*

1984

- Universität des Saarlandes, December 1984: *Constructive aspects of the inverse Galois problem.*
- University of Copenhagen, August 1984: *On the inverse problem of Galois Theory.*

1983

- City College, CUNY, October 1983: *A constructive approach to the inverse Galois problem.*
- York University, March 1983: *Fermat-type surfaces.*
- University of Alberta, February 1983: *The arithmetic of Fermat-type surfaces.*
- University of Western Ontario, January 1983: *The arithmetic of Fermat-type varieties over finite fields.*

1982

- University of Ottawa, December 1982: *The arithmetic of Fermat-type varieties.*
- Louisiana State University, November 1982: *The arithmetic of the product of two algebraic curves over finite fields.*
- Tsuda College, July 1982: *Dihedral representations of Galois groups.*
- Tsuda College, July 1982: *Fermat varieties.*
- Purdue University, January 1982: *The arithmetic of Fermat surfaces over finite fields.*
- Universität des Saarlandes, January 1982: *Non-abelian class field theory, and the inverse problem of Galois Theory.*

≤ 1981

- Universität Hamburg, May 1981: *Fermat surfaces.*
- Universität des Saarlandes, February 1980: *Formal groups and arithmetic of algebraic curves.*
- SFB 40 Bonn, December 1979: *Formal groups arising from algebraic curves.*
- Tôhoku University, August 1979: *Formal groups arising from Fermat curves.*
- University of Western Ontario, November 1978: *Some arithmetic properties of elliptic curves.*
- University of Ottawa, October 1978: *Formal groups and elliptic curves.*
- University of Copenhagen, February 1975: *Formal groups associated to Dirichlet series with Euler product, and elliptic curves.*

II. Seminars:**2022**

- Bhaskara Mathematics Seminar, Pune, India, May 5, 2022: *Modularity of certain Calabi–Yau threefolds over $\mathbb{Q}$.* Zoom talk.

2020

- University of Rochester, Number Theory Seminar, November 2020: *Siegel modularity of certain Calabi–Yau threefolds over $\mathbb{Q}$.* Zoom talk

2019

- National Taiwan University, Taipei, Taiwan, July 30, 2019: *Siegel modularity of certain Calabi–Yau threefolds over $\mathbb{Q}$.*
- University of Hannover, Algebraic Geometry Seminar, June 6, 2019: *4-dimensional Galois representations arising from certain Calabi–Yau threefolds over $\mathbb{Q}$.*

2018

- National Taiwan University, Algebraic Geometry Seminar, July 30, 2018: *Supercongruences for rigid hypergeometric Calabi–Yau threefolds.*

- Hiroshima University, Algebra Seminar, July 20, 2018 (1 1/2 hrs.): *Supercongruences for rigid hypergeometric Calabi–Yau threefolds*.
- University of Copenhagen, Number Theory Seminar, May 7, 2018: *Supercongruences for rigid hypergeometric Calabi–Yau threefolds*.

2017

- University of Koeln, June 27, 2017: *Supercongruences for rigid hypergeometric Calabi–Yau threefolds*.
- Humboldt University at Berlin, June 15, 2017: *The modularity/automorphy of Calabi–Yau varieties of CM type*.
- Max-Planck Institute for Mathematics, Bonn, June 7, 2017: *Supercongruences for rigid Calabi–Yau threefolds of hypergeometric type*.
- University of Cambridge, May 31, 2017: *The modularity/automorphy of Calabi–Yau varieties of CM type*.

2016

- University of Copenhagen, January 25, 2016: *Modularity/Automorphy of Calabi–Yau varieties of CM type*.

2015

- University of Saarlandes, Number Theory seminar, June 8, 2015: *Arithmetic modularity of Calabi–Yau manifolds*
- University of Koeln, Number Theory Seminar, May 11, 2015: *Modularity/Automorphy of Calabi–Yau manifolds over $\mathbb{Q}$*
- Rutgers University, Geometry, Symmetry and Physics Seminar, February 16, 2015: *Arithmetic of Calabi–Yau varieties over $\mathbb{Q}$ of dimension ≤ 3*

2014

- National Taiwan University, Taipei, July 28, 2014 : *Modularity/Automorphy of Calabi–Yau varieties* .
- Tsuda College, Number Theory Seminar, July 3, 2014 : *Modularity of Calabi–Yau varieties*.

2012

- Tsuda College, Number Theory Seminar, July 12, 2012: *Calabi–Yau varieties of CM type and their modularity*. (2 hours)
- Nagoya University, Algebraic Geometry Seminar, July 2, 2012: *Modularity (automorphy) of Calabi–Yau varieties over $\mathbb{Q}$* . (1 1/2 hours)

2011

- National Center for Theoretical Sciences (NCTS), Hsinchu, Taiwan, June 2011 : *Arithmetic and Geometry of Calabi–Yau Varieties over $\mathbb{Q}$* (a series of three lectures) (CANCELLED).
- Louisiana State University, February 25, 2011: *The modularity of K3-fibered Calabi–Yau threefolds with involution*.

2010

- University of Copenhagen, Concentrated Graduate Course, September 27–October 1, 2010: *The modularity of Calabi–Yau varieties over $\mathbb{Q}$* . Five hours.
- Tokyo Metropolitan University, Algebraic Geometry Seminar, August, 24, 2010: *The modularity of certain K3-fibered Calabi–Yau threefolds over $\mathbb{Q}$* .

- InterCity Number Theory Seminar, University of Utrecht, May 21, 2010: *The modularity of certain K3-fibered Calabi–Yau threefolds.*

- Hebrew University of Jerusalem, NumberTheory/Algebraic Geometry Seminar, May 12, 2010: *The modularity of certain K3-fibered Calabi–Yau threefolds.*

2009

- UQAM, Algebraic Geometry Seminar, October 14, 2009: *Mirror symmetry for elliptic curves.*

- Nagoya University, Algebraic Geometry Seminar, June 22, 2009 :*On the modularity of Calabi–Yau manifolds over $\mathbb{Q}$.*

- Tsuda College, Number Theory Seminar, June 11, 2009: *Singular K3 surfaces and applications.*

- Hiroshima University, Algebraic Geometry Seminar, May 29, 2009 : *Modularity of Calabi–Yau varieties over $\mathbb{Q}$.*

2008

- University of Tokyo, Japan, July 24, 2008:*On the modularity of Calabi–Yau varieties over $\mathbb{Q}$.*

- Hebei Normal University, She Jie Zhounag, China, July 12, 2008: *The modularity of Calabi–Yau threefolds over $\mathbb{Q}$.*

- Chinese Academy of Sciences Morningside Center, and Hsinghua University Joint Seminar, Beijing, China, July 7, 2008: *The modularity of K3-fibered Calabi–Yau threefolds.*

- China East Normal University, Shanghai, China, June 30: *Mirror symmetry for elliptic curves.*

- Center of Mathematical Sciences (CMS), Hangzhou, China, June 25, 2008: *Mirror symmetry for elliptic curves.*

- Center of Mathematical Sciences (CMS), Hangzhou, China, June 27, 2008: *The modularity of K3-fibered Calabi–Yau threefolds.*

2007

- EPFL, Laussane, Switzerland, Algebra/Number Theory Seminar, November 7, 2007: *The modularity of Calabi–Yau varieties.*

- University of Oxford, May 31, 2007: *Quasimodular forms and mirror symmetry for elliptic curves*

- University of Cambridge, May 8, 2007: *Quasimodular forms and mirror symmetry for elliptic curves*

- Universite Paris VI, Jussieu, March 26, 2007: *The modularity of Calabi–Yau varieties*

- Hebrew University of Jerusalem, March 14, 2007: *Quasimodular forms and mirror symmetry for elliptic curves*

- IHES, February 21, 2007: *Quasimodular forms and mirror symmetry for elliptic curves*

2006

- The BIRS Five Day Workshop on *Arithmetic of K3 surfaces*, November 30–December 5, 2008: *The modularity of certain K3 surfaces with non-symplectic group actions.*

- The Fields Weekend Workshop on Algebraic Varieties, November 1–2, 2008: *The modularity of certain K3 surfaces with non-symplectic group actions.*

- Boston University, Mathematical Physics Seminar, November 2, 2006: *Quasimodular forms and mirror symmetry for elliptic curves*

- Boston University, Algebraic Geometry Seminar, November 3, 2006: *Motives, Mirror Symmetry, and Modularity*
- Hokkaido University, Algebraic Geometry Seminar, August 9, 2006: *Motives and mirror symmetry*
- Max-Planck-Institut für Mathematik, Number Theory Seminar, June 21, 2006: *Motives, Mirror Symmetry and Modularity*
- University of Hannover, Algebraic Geometry Seminar, May 11, 2006: *Motives and mirror symmetry*.

2005

- SUNY Buffalo, Algebra Seminar, September 9, 2005: *Arithmetic aspects of Calabi–Yau threefolds and Mirror Symmetry*.
- Saitama University, Algebraic Geometry, June 15, 2005: *Arithmetic of Calabi–Yau threefolds* (1 1/2 hrs.).
- Hokkaido University of Education, Lecture for Seniors, June 9, 2005: *Affine transformations and iterated function systems* (1 1/2 hrs.).
- Hokkaido University, Algebraic Geometry Seminar, June 1, 2005: *Modularity of Calabi–Yau varieties* (2 hrs.).
- Hokkaido University, Algebraic Geometry Seminar, June 1, 2005 : *Arithmetic of non-rigid Calabi–Yau threefolds* (2 hrs.).
- Tsuda College, Undergraduate Seminar, May 9, 2005 : *Affine transformations and iterated function systems* (1 1/2 hrs.).

2004

- Kobe University, Algebraic Geometry Seminar, July 21, 2004: *On the modularity of non-rigid Calabi–Yau threefolds*.
- University of Mainz, Number Theory Oberseminar, June 9, 2004: *On the modularity of certain non-rigid Calabi–Yau threefolds*.
- Max-Planck-Institute for Mathematics, Bonn, Number Theory Seminar, June 2, 2004 : *The modularity of certain non-rigid Calabi–Yau threefolds*.
- University of Hannover, Complex Manifolds Seminar, April 22, 2004: *Mirror symmetry and mirror moonshine*.
- University of Göttingen, Algebraic Geometry Oberseminar, April 21, 2004: *Arithmetic of Calabi–Yau Varieties*.
- University of Hannover, Algebraic Geometry Seminar, April 8, 2004: *Fermat motives*. (1.5 hrs.)
- University of Hannover, Algebraic Geometry Workshop, April 5, 2004: *The modularity of Calabi–Yau varieties*.
- University of Leiden, InterCity Number Theory Seminar, March 5, 2004: *Mirror symmetry and mirror moonshine*. (2 hrs.).
- University of Groningen, InterCity Number Theory Seminar, February 27, 2004: *Calabi–Yau orbifolds of CM type*. (2 hrs.).
- University of Utrecht, Joint InterCity Number Theory and Geometry Seminar, February 13, 2004: *On the modularity of Calabi–Yau threefolds: Non-rigid case*. (2 hrs.).
- University of Leiden, InterCity Number Theory Seminar, January 30, 2004: *On the modularity of Calabi–Yau varieties*. (2 hrs.).

2003

- North Carolina State University, Algebra Seminar, April 12, 2003: *The modularity of Calabi–Yau varieties.*

2002

- University of Alberta, Algebraic Geometry Seminar, November 8, 2002: *Update on Mirror-Moonshine Phenomenon.*
- McMaster University, Algebra and K-Theory Seminar, October 21, 2002: *The modularity of Calabi–Yau threefolds.*
- Kyoto University, Algebraic Geometry Seminar, August 14, 2002: *Update on the modularity of Calabi–Yau threefolds.*
- University of Essen, Algebraic Geometry Seminar, June 11, 2002: *The modularity of Calabi–Yau varieties: Update.*
- University of Copenhagen, Algebra Seminar, June 4, 2002: *The modularity of certain 2-dimensional Galois representations.*
- String Theory Seminar, University of Oxford, May 20, 2002: *The modularity of Calabi–Yau varieties: Update.*
- Number Theory Seminar, University of Cambridge, May 14, 2002: *The modularity of Calabi–Yau varieties.*
- Pennsylvania State University, April 11, 2002: *Mirror moonshine phenomenon.*

2001

- ETH Number Theory Seminar, June 22, 2001: *The modularity conjecture for Calabi–Yau varieties over $\mathbb{Q}$.*
- Ecole Polytechnique Laussane, Number Theory Seminar, June 12, 2001: *Arithmetic of Calabi–Yau varieties and Mirror Symmetry.*
- Max-Planck-Institut für Mathematik Bonn, Number Theory Seminar, May 23, 2001: *The modularity conjecture for Calabi–Yau varieties over $\mathbb{Q}$.*
- Oxford University, Joint String Theory/Number Theory Seminar, May 18, 2001: *The modularity conjecture for Calabi–Yau varieties.*
- University of Cambridge, Number Theory Seminar, May 15, 2001: *The congruent number problems in dimensions 1 and 2.*
- CRM University Autònoma Barcelona, March 15, 2001: *Calabi–Yau varieties and Mirror symmetry II : Mirror symmetry for certain Calabi–Yau threefolds, and L-series.* (2 hrs.).
- University of Bordeaux, February 15, 2001: *The congruent number problems of dimensions 1 and 2.*
- University of Barcelona, February 6, 2001: *Arithmetic of Calabi–Yau varieties and mirror symmetry I : The modularity conjecture for rigid Calabi–Yau threefolds.* (2 hrs.).

2000

- Noetherian Ring Seminar, UC Berkeley, November 30, 2000: *Calabi–Yau varieties and mirror symmetry.*
- University of California, Santa Barbara, November 17, 2000: *Arithmetic of Calabi–Yau varieties and mirror symmetry,* (3 hrs.).
- Mathematical Sciences Research Institute (MSRI) Berkeley, Algorithmic Number Theory Seminar, November 15, 2000: *Rigid Calabi–Yau threefolds and their modularity.*
- University of Alberta, October 27, 2000: *Calabi–Yau varieties and mirror symmetry.*

- Tôhoku University, May 31, 2000 *Calabi–Yau varieties and mirror symmetry*. (1.5 hrs.).
- Tôhoku University, May 30, 2000: *Mirror moonshine conjecture for K3 surfaces*. (1.5 hrs.).
- Kyoto University, May 26, 2000: *The modularity conjecture for rigid Calabi–Yau threefolds over $\mathbb{Q}$* . (1.5 hrs.).
- Chiba University, May 15, 16, 17, 18: Concentrated Graduate Course on *Arithmetic of Calabi–Yau varieties and mirror symmetry*. (6 hrs.).
- Tsuda College, May 11, 2000: Lecture for sophomores *Diophantine equations*.
- Pennsylvania State University, University Park PA, February 19–26, 2000, Three lectures: *The modularity for rigid Calabi–Yau threefolds over $\mathbb{Q}$* , *The arithmetic of orbifold Calabi–Yau varieties and mirror symmetry conjecture*, and *The orbifold Calabi–Yau hypersurfaces and mirror maps*. (3 hrs.).

1999

- University of California Berkeley, Number Theory Seminar, October 27, 1999 : *The modularity conjecture for rigid Calabi–Yau threefolds over $\mathbb{Q}$*
- The Erwin Schrödinger International Institute for Mathematical Physics, Vienna, June 24, 1999 : *The modularity conjecture for rigid Calabi–Yau threefolds*.
- ETH Zürich, Number Theory Seminar, April 16, 1999 : *Thompson series, and mirror maps of certain pencils of K3 surfaces*.
- Max-Planck-Institut für Mathematik, Bonn, Number Theory Seminar, April 7, 1999 : *Mirror moonshine*.

1998

- Tsuda College, Special Lecture for Sophomores, October 29, 1998 : *Aspects of $SL(2, \mathbb{Z})$* .
- Tôhoku University, Algebraic Geometry Seminar, Sendai, Japan, October 23, 1998 : *Arithmetic of Calabi–Yau varieties over number fields*.
- Tôhoku University, Algebraic Geometry Seminar, Sendai, Japan, October 23, 1998 : *The modularity conjecture for rigid Calabi–Yau threefolds over $\mathbb{Q}$* .
- University of Western Ontario, Algebra Seminar, September 30, 1998 : *Arithmetic aspects of Calabi–Yau varieties and mirror symmetry conjecture*.
- University of Michigan, Number Theory Seminar, September 28, 1998 : *The modularity conjecture for rigid Calabi–Yau threefolds over number fields*
- Purdue University, West Lafayette, Indiana, January 27, 1998: *Constructive aspects of the Inverse Galois Problem: Solvable groups*.

1997

- McMaster University, Hamilton, Ontario, October 26, 1997 : *Arithmetic of certain Calabi–Yau hypersurfaces*.
- Kyushu University, Fukuoka, Japan, August 6, 1997 : *The mirror maps of certain K3 surfaces, and Thompson series*.
- Kyushu University, Fukuoka, Japan, August 5, 1997 : *The L -series of certain Calabi–Yau threefolds over number fields*.
- Max-Planck-Institut für Mathematik, Bonn, June 12, 1997 : *The L -series of certain Calabi–Yau threefolds over number fields*.
- University of Oxford, June 6, 1997 : *The L -series of certain Calabi–Yau threefolds*.
- University of Cambridge, May 20, 1997 : *Arithmetic of certain Calabi–Yau varieties*.

- Pennsylvania State University, April 10, 1997 : *The L-series of certain Calabi–Yau type varieties over number fields.*
- University of Toronto, Algebraic Geometry Seminar, March 5, 1997: *Zeta-functions of certain Calabi–Yau type varieties over number fields.*
- University of Alberta, Geometry Seminar, January 31, 1997: *The mirror maps of certain K3 surfaces and Thompson series.*

1996

- University of Tokyo (Komaba), Algebraic Geometry Seminar, July 18, 1996: *Arithmetic of certain Calabi–Yau type varieties over number fields.*
- Tsuda College, Special Lecture for Undergraduates, July 16, 1996: *Elliptic Curves and Applications.*
- Institut für Experimentelle Mathematik, Essen, June 5, 1996: *Arithmetic of Calabi–Yau type varieties over number fields.*
- Max–Planck–Institut für Mathematik Bonn, Special Seminar, June 4, 1996: *Arithmetic of Calabi–Yau type varieties.*
- University of Barcelona, Number Theory Seminar, May 29, 1996: *The Monster, Thompson series, and Applications.*
- University of Barcelona, Number Theory Seminar, May 15, 1996: *Arithmetic of certain Calabi–Yau type varieties over number fields*
- University of Cambridge, Number Theory Seminar, April 30, 1996 : *Arithmetic of certain Calabi–Yau type varieties over number fields.*
- North Carolina State University, Algebra Seminar, March 8, 1996 : *Arithmetic of Calabi–Yau type varieties.*

1995

- Tsuda College, Special Lecture for Undergraduates, July 13, 1995 : *Fermat’s Last Theorem.*
- Kyoto University, Algebraic Geometry Seminar, July 7, 1995 : *Arithmetic of Calabi–Yau type varieties.*
- University of Cambridge, Number Theory Seminar, June 20, 1995 : *Arithmetic of certain Calabi–Yau manifolds.*

1994

- University of Waterloo, Number Theory, October 17, 1994 : *Arithmetic properties of Calabi–Yau manifolds in low dimensions.*
- University of Cambridge, Number Theory, June 14, 1994 : *Weighted K3 surfaces over number fields.*
- University of Oxford, Number Theory Seminar, June 8, 1994 : *Weighted K3 surfaces over number fields.*
- Institut für Experimentelle Mathematik, GHS Essen, April 27, 1994 : *Special values of zeta-functions of diagonal hypersurfaces over finite fields.*

1993

- University of Western Ontario, Algebra Seminar, October 6 1993 : *Arithmetic of diagonal hypersurfaces over finite fields.*
- The Fields Institute, Fermat’s Last Theorem Seminar, September 21, 1993 : *The work of Frey.*

- University of Glasgow, Algebra and Combinatorics Seminar, May 13, 1993 : *Singular values of Thompson series*.
- Universität des Saarlandes, Oberseminar, April 29, 1993 : *Singular values of Thompson series*.
- Max–Planck–Gesellschaft “Algebraische Geometrie und Zahlentheorie” Berlin, April 1993: *Arithmetic of diagonal hypersurfaces over finite fields*.
- Max–Planck–Institut für Mathematik Bonn, Modular Form Lunch Seminar March 1993: *Brauer numbers of twisted Fermat motives*.
- The Newton Institute, January 1993: *Brauer groups of twisted Fermat motives*.

1992

- CUNY Graduate Center, November 1992: *Special values of zeta-functions of diagonal hypersurfaces over finite fields*.
- Kyoto University, June 1992: *Monstrous moonshine and monstrous class fields*.
- Ohio State University, February 1992: *Arithmetic of diagonal hypersurfaces*.

1991

- University of Cambridge, May 1991: *Diagonal hypersurfaces*.
- University of Toronto, April 1991: *Special values of zeta-functions of diagonal hypersurfaces over finite fields*.
- Carleton-Ottawa, March 1991: *Arithmetic of diagonal hypersurfaces*.
- CUNY Graduate Center, February 1991: *Arithmetic of diagonal hypersurfaces*.

1990

- University of Western Ontario, November 1990: *Special values of zeta-functions of diagonal hypersurfaces over finite fields*.
- University of Waterloo, November 1990: *Special values of zeta-functions of diagonal hypersurfaces over finite fields*.
- University College of Swansea, June 1990: *K3 surfaces and Artin–Mazur formal groups*.
- University of Cambridge, June 1990: *Values of zeta-functions of Fermat varieties over finite fields*.
- University of Oxford, May 1990: *Arithmetic of Fermat varieties over finite fields*.
- CUNY Graduate Center, March 1990: *On the norms of algebraic numbers associated to Jacobi sums*.

1989

- University of Maryland, December 1989: *Arithmetic of Fermat varieties (Norms of algebraic numbers associated to Jacobi sums)*.
- CUNY Graduate Center, April 1989: *Explicit construction of the Hilbert class fields of imaginary quadratic fields*.

1988

- Max-Planck-Institut für Mathematik, December 1988: *Certain algebraic surfaces over finite fields*.
- Kyoto University, June 1988: *Fermat motives and Jacobi sums*.
- Rensselaer Polytechnic Institute, February 1988: *Primality testing and elliptic curves*.
- University of Waterloo, February 1988: *Arithmetic of Fermat varieties over finite fields*.

1987

- CUNY Graduate Center, October 1987: *The arithmetic of certain algebraic surfaces over finite fields.*
- Queen's University, February 1987: *The arithmetic of algebraic surfaces over finite fields.*

1985

- University of Illinois, June 1985: *The Brauer group of a product variety.*
- Concordia University, April 1985: *The Brauer group of the product of two algebraic curves over finite fields.*

1984

- Universität des Saarlandes, December 1984: *The arithmetic of the product of two curves over finite fields.*
- State University of Buffalo, October 1984: *A constructive aspect of the inverse Galois problem.*
- University of Waterloo, February 1984: *A constructive approach to the inverse Galois problem.*
- Rensselaer Polytechnic Institute, February 1984: *A constructive approach to the inverse Galois problem.*
- Rutgers University, February 1984: *A constructive approach to the inverse Galois problem.*
- CUNY Graduate Center, February 1984: *The arithmetic of Fermat-type surfaces over finite fields.*

1982

- University of Cambridge, June 1982: *The arithmetic of Fermat surfaces over finite fields.*

1981

- Queen's University, November 1981: *The arithmetic of Fermat surfaces over finite fields.*
- Queen's University, November 1981: *On the inverse problem of Galois Theory.*
- University of Copenhagen, August 1981: *The arithmetic of Fermat surfaces over finite fields.*

≤ 1980

- Universität Bonn, July 1980: *The Arithmetic of Fermat surfaces over finite fields.*
- Carleton University, February 1979: *Formal groups and their applications.*
- Universität Heidelberg, December 1978: *Elliptic curves over p -adic fields.*
- Queen's University, October 1978: *Some arithmetical properties of elliptic curves.*
- Universität Bonn, August 1978: *Jacobian varieties of hyperelliptic curves.*
- Universität Bonn, January 1978: *Elliptic curves and canonical subgroups of formal groups.*
- University of Tokyo, June 1977: *Formal groups and elliptic curves.*

III. Conferences, Workshops and Symposia:**2026**

- “Calabi–Yau Varieties and Related Topics, 2026” at Tokyo Metropolitan University, July 4–5, 2026: *Siegel paramodular Calabi–Yau threefolds.* (A co-organizer and an invited speaker)

2025

- “Calabi–Yau Varieties and Related Topics, 2025” at Tsuda University, July 5–6, 2025: *Modularity of certain families of K3 surfaces*. (A co-organizer and an invited speaker)
- Workshop on Arithmetic of Calabi–Yau Manifolds at Mainz Institute for Theoretical Physics, March 17–28, 2025: *Certain families of K3 surfaces and their modularity*. (An invited speaker)
- Silver Workshop VII (the final workshop) at University of Tokyo, March 12, 2025: *Certain families of K3 surfaces and their modularity*. (An co-organizer and an invited speaker)

2024

- Geometry and Arithmetic Colloquium, University of Mainz, July 18, 2024: *Certain families of K3 surfaces and their modularity*. (An invited speaker)

2023

- Silver Workshop VI: “Complex Geometry and Related Topics” at OIST: August 7–9, 2023: *Modularity of Calabi–Yau threefolds of Borcea–Voison type*. (A co-organizer and an invited speaker)
- “New trends of conformal theory from probability to gravity” at OIST: July 31–August 4, 2023: *Modularity of Calabi–Yau motives of rank ≤ 4* . (An invited speaker)
- BIRS Five-Day Workshop on “Around Symmetries of K3 Surfaces”, February 26–March 3, 2023. Online participation.

2022

- Silver Workshop V, “Complex Geometry and Related Topics”, November 9–11, 2022 at OIST: *Modularity of Calabi–Yau threefolds of Hodge type $(1, 1, 1, 1)$* . (A co-organizer and an invited speaker)
- ICM 2022 satellite conference on *L-functions and modularity of algebraic varieties*, June 1–9, 2022, Moscow National Research University “Higher School of economics” and the Institute for Information and Transmission problems of the Russian Academy of Science: Plenary Talk *Siegel modularity of some Calabi–Yau threefolds over $\mathbb{Q}$* . (Cancelled)
- Newton Institute, July 19–22, 2022, Cambridge, UK: *Rank 4 weight 3 Calabi–Yau motives of hypergeometric type*. (An invited speaker) Online talk.
- Silver Workshop IV: “Complex Geometry and Related Topics”, January 11–12, 2022 at OIST: *Siegel modularity of certain Calabi–Yau threefolds over $\mathbb{Q}$* . (A co-organizer and an invited speaker). Zoom talk.

2020

- University of Rochester Number Theory Seminar, November 2020: *Siegel modularity of certain Calabi–Yau threefolds over $\mathbb{Q}$* . (Zoom meeting)

2019

- Hakodate Workshop on *Calabi–Yau Manifolds and Mirror Symmetry*, August 8–9, 2019: *Siegel modularity of certain Calabi–Yau threefolds over $\mathbb{Q}$* .
- NSA Conference on *Explicit Methods for Abelian Varieties and K3 Surfaces*, Utah State University, July 5–7, 2019: *Siegel modularity of certain Calabi–Yau threefolds over $\mathbb{Q}$* .
- OIST Silver Workshop, February 2019: *Four-dimensional Galois representations arising from certain Calabi–Yau threefolds*.
- CY motives, Mainz, January 29, 2019: *On the four-dimensional Galois representations arising from Calabi–Yau threefolds*.

2018

- I-70 Algebraic Geometry Symposium, October 27-28, 2018, at University of Missouri in St. Louis: *Four-dimensional Galois representations arising from Calabi–Yau threefolds over q* .
- Working Workshop on Calabi–Yau Manifolds, Mirror Symmetry and Related Topics, August 9–10, 2018, Gakushuin University, Japan: *Modularity of non-rigid Calabi–Yau threefolds with Hodge numbers of the third cohomology equal to 1*
- Silver Workshop on Complex Geometry and Related Topics, July 27, 2018, Tokyo University, Japan: *Supercongruences for rigid hypergeometric Calabi–Yau threefolds*
- Automorphic Forms and Algebraic Geometry, May 14–19, 2018, St. Petersburg, Russia: *Supercongruences for rigid hypergeometric Calabi–Yau threefolds*

2017

- KIAS Workshop on Arithmetic Geometry and Quantum Field Theory, August 12–20, 2017: *Supercongruences for rigid hypergeometric Calabi–Yau threefolds*.
- Tsuda–Gakushuin Joint Workshop, August 7-8, 2017: *Supercongruences for rigid hypergeometric Calabi–Yau threefolds*.
- Louisiana State University, Southern Number Theory Conference: *Mirror symmetry for elliptic curves*, April 8–9, 2017.

2016

- Tsuda College–OIST Joint Workshop on *Calabi–Yau Varieties: Arithmetic, Geometry and Physics*, August 2, 2016: *Automorphy of Calabi–Yau varieties of CM type*.
- CIMAT, Guanajuato, Mexico, A graduate mini course on *Calabi–Yau Varieties and Mirror Symmetry*, March 29–April 19, 2016.
- The Fields Institute Weekend Workshop on *Algebraic Varieties with Special Emphasis on Calabi–Yau Varieties*, March 12, 2016: *Modularity/Automorphy of Calabi–Yau varieties of CM type*.
- String Math 2015 at RSIMF, Sanya, Dhina, December 31, 2015–January 4, 2016: *Modularity/Automorphy of Calabi–Yau Varieties of CM type*, Plenary Speaker.

2015

- The Fields Institute Weekend Workshop on *Algebraic Varieties with Special Emphasis on Calabi–Yau Varieties*, November 21, 2015: *Enumerative geometry and modular forms*.
- Explicit Methods for Modularity of K3 Surfaces and Other Higher Weight Motives, October 22, 2015, ICERM Brown University, USA: *Calabi–Yau threefolds of Borcea–Voisin type and arithmetic mirror symmetry* (45 min.)
- Mini-workshop on Calabi–Yau Varieties: Arithmetic, Geometry and Physics, August 5–7, 2015, Tsuda College, Tokyo, Japan: *Enumerative geometry and modular forms*
- DIAMANT Symposium, Veenendal, Holland, May 28, 2015: *Update on automorphy of Calabi–Yau manifolds*
- Mini-workshop on Algebraic Varieties, Hypergeometric Series and Modular Forms, Louisiana State University, Baton Rouge, April 2015: *Automorphy of non-rigid Calabi–Yau threefolds*

2014

- Tsuda College mini-workshop on “Calabi–Yau Varieties: Arithmetic, Geometry and Physics”, August 7–8, 2014 : *Updates on modularity of Calabi–Yau varieties*.
- The Impact of Computation in Number Theory, National center for theoretical sciences, Taiwan, August 1, 2014 : *Update on modularity of Calabi–Yau varieties* .

- Calabi–Yau Manifolds and their Moduli, the satellite workshop of String-Math 2014, Edmonton, June 15, 2014 : *Update on modularity around Calabi–Yau varieties*.
- The Fields Institute Weekend Workshop on Calabi–Yau Varieties, March 16, 2014: *Modularity of non-rigid Calabi–Yau threefolds*.

2013

- The 2013 CMS Winter Meeting, December 9, Ottawa. Session on *Modular Forms and Physics: The modularity of non-rigid Calabi–Yau threefolds*.
- Workshop on Modular Forms around String Theory, the Fields Institute, September 20, 2013: *Automorphy of certain Calabi–Yau threefolds of Borcea–Voisin type*.
- Introductory Workshop on Calabi–Yau Varieties: Arithmetic, Geometry and Physics, the Fields Institute, August 29, 2013: *Modularity of Calabi–Yau varieties over $\mathbb{Q}$* .
- Introductory Workshop on Calabi–Yau Varieties: Arithmetic, Geometry and Physics, the Fields Institute, August 30, 2013 : *Introduction to mirror moonshine*.

2012

- String Theory for Mathematicians, Stony Brook University, The Simons Center, May 17, 2012: *Automorphy of some K3 fibered Calabi–Yau threefolds*.
- Workshop on Algebraic Varieties with Special Emphasis on Calabi–Yau Manifolds, April 15, 2012: *Quadratic twists of rigid Calabi–Yau threefolds over the rationals*.

2011

- Workshop on Arithmetic and Geometry of K3 surfaces and Calabi–Yau threefolds, August 16, 18, 2011: *Modularities of Calabi–Yau varieties* (2 talks).

2010

- Tsuda College Mini Workshop, August 30, 2010: *The modularity of certain K3-fibered Calabi–Yau threefolds over $\mathbb{Q}$* .

2009

- The Fields Institute Weekend Workshop on “Algebraic Varieties”, October 31–November 1, 2009: *The modularity of certain quotients of $K3 \times E$* .
- ESI Conference on “Number Theory and Physics”, March 16–20, 2009: *K3 surfaces with non-symplectic group actions, and their modularity*.
- The Fields Weekend Workshop on “Algebraic Varieties”, March 7–8, 2009: *On the modularity of certain K3 surfaces with non-symplectic group actions*.

2008

- BIRS 5-Days Workshop on “Arithmetic of K3 surfaces”, November 30–December 5, 2008: *The modularity of certain K3 surfaces with non-symplectic group actions*.
- The Fields Weekend Workshop on “Algebraic Varieties”, November 1–2, 2008: *The modularity of certain K3 surfaces with non-symplectic group actions*.
- Tsuda College Mini-Workshop on “Number Theory and Physics at the Crossroads”, August 4–6, 2008: *Number theory and physics*.
- Boston University Conference on “Motives, Quantum Field Theory, and Pseudodifferential Operators, June 2–13, 2008”, June 13, 2008: *Modularity of K3 fibered Calabi–Yau threefolds*. 1& 1/2 hours.

- Boston University Conference on “Motives, Quantum Field Theory, and Pseudodifferential Operators, June 2–13, 2008”, June 11, 2008: *Mirror symmetry for elliptic curves*. 1 & 1/2 hours.

- The Fields Weekend Workshop on Algebraic Varieties, March 15–16, 2008: *Arithmetic of certain K3-fibered Calabi–Yau threefolds*.

- The AMS Winter Meeting at San Diego, January 5–8, 2008, Special Session on Modularity and Modular Forms: *Zeta and L-functions of K3-fibered Calabi–Yau threefolds*.

2007

- EPFL Bernoulli Centre, Laussane, Swiztheland, Novermber 5–10, 2007, Workshop on p -adic : *Mirror symmetry for elliptic curves*.

2006

- The CMS 2006 winter Meeting Toronto, December 9–11, 2006, Special Session on *Calabi–Yau Varieties and*

Mirror Symmetry: Motives, Mirror Symmetry, and Modularity.

- The Fields Institute Weekend Workshop on *Algebraic Varieties*, October 22, 2006: *Quasi-modular forms and mirror symmetry for elliptic curves*.

- Tsuda College Mini-Workshop : *Modular Forms, Calabi–Yau Varieties and String Duality*, August 4, 2006: *Motives and mirror symmetry*.

- BIRS Five Days Workshop on “Modular Forms and String Duality”; June 3–8, 2006. *Motives, Mirror Symmetry and Modularity*.

- Oberwolfach Workshop on “Zeta-functions, index and K -theory; interactions with physics”, April 30–May 6, 2006. *Arithmetic mirror symmetry*.

2005

- The Fields Institute Weekend Workshop on “Arithmetic and Geometry of Algebraic Varieties with Special Emphasis on Calabi–Yau Varieties and Mirror Symmetry”, November 5–6, 2005. *Motives and mirror symmetry*.

- The Lorentz Center, University of Leiden workshop on “Arithmetic Geometry and High Energy Physics”, August 28– September 2, 2005. *Motives and mirror symmetry*.

- Tsuda College Mini-Workshop: *Modular Forms, Calabi–Yau Varieties, and String Dualities*, June 11, 12, 2005. *Arithmetic mirror symmetry*.

2004

- Mirror Symmetry Workshop at Perimeter Institute, Waterloo, November 19–23, 2004: *Certain non-rigid Calabi–Yau threefolds and their modularity*.

- Jensen Symposium on Algebra and Number Theory, in honor of Christian U. Jensen’s retirement, Sept. 3–5, 2004: *Arithmetic asepts of Calabi–Yau varieties and mirror symmetry*.

- Workshop at Tsuda College on “Calabi–Yau Varieties and Mirror Symmetry”, July 17–19, 2004: *The modularity of Calabi–Yau varieties*.

- Workshop at Tsuda College on “Calabi–Yau Varieties and Mirror Symmetry”, July 17–19, 2004: *Arithmetic of certain Calabi–Yau orbifolds of CM type*.

- Weekend Workshop at the Fields Institute on “Higher Dimensional Geometry (with Special Emphasis on Calabi–Yau Varieties and Mirror Symmetry)”, March 27–28, 2004.

2003

- Calabi–Yau Varieties and Mirror Symmetry, BIRS, December 6–11, 2003.
- Mini-Workshop at the Fields Institute on “Arithmetic and Geometry of Algebraic Varieties (with Special Emphasis on Calabi–Yau Varieties)”, October 4–5 and November 8–9, 2003: *Modularity of Calabi–Yau Varieties*.
- Explicit Methods in Number Theory, Oberwolfach, July 25 2003: *Calabi–Yau manifolds and mirror symmetry*.
- Mini-Workshop at the Fields Insitute on “Higher Dimensional Varieties with Special Emphasis on Calabi–Yau Varieties and Mirror Symmetry”, January 25–26, 2003: *Update on the modularity of Calabi–Yau varieties*.

2002

- CMS Winter Meeting 2002, Special Session on Lie Algebras and Moonshine, December 8–10, 2002: *The modularity of Calabi–Yau threefolds with $K3$ fibrations or Update on Mirror–Moonshine Phenomenon*.
- Mathematisches Forschungsinstitut Oberwolfach (MFI) “Complexe Analysis”, August 25–31, 2002: *Modularity questions of Calabi–Yau varieties*.

2001

- CMS Winter Meeting 2001, Special Session on Moonshine, December 8–10, 2001: *Mirror moonshine phenomenon*.
- Workshop on “Arithmetic, Geometry and Physics around Calabi–Yau Varieties and Mirror Symmetry”, The Fields Institute, July 23–29, 2001: *The modularity of Calabi–Yau varieties*
- Barcelona Number Theory Workshop, January 29–February 2, 2001: *Introduction to Calabi–Yau varieties and Mirror Symmetry*.

2000

- The AMS San Francisco Meeting, Special Session on “Lower genus curves and applications”, October 21–22, 2000: *Rational cuboid problem*
- The Clay Introductory Workshop on Algorithmic Number Theory, MSRI Berkeley, August 14–23, 2000: *Congruent number problem in dimension one and two*

1999

- Moonshine Workshop, CRM Montreal, May 29–June 4, 1999: *The mirror moonshine conjecture, and its generalizations*
- Mentoring Program for Women in Mathematics, Institute for Advanced Study, Arithmetic Algebraic Geometry, May 17–28, 1999. One of the three lecturers: *Lecture 1: The modularity conjecture for rigid Calabi–Yau threefolds over number fields; Lecture 2: Arithmetic of orbifold Calabi–Yau threefolds over number fields and mirror symmetry conjecture; Lecture 3: $K3$ surfaces, Mirror–Moonshine Conjecture*
- CRM Montreal Workshop ”Arithmetic Algebraic Geometry” May 14–18, 1999. *The modularity conjecture for rigid Calabi–Yau threefolds over number fields*

1998

- A mini-workshop ”Arithmetic and Geometry of Algebraic Cycles”, November 27, 1998, CRM, Montreal: *The modularity conjecture for rigid Calabi–Yau threefolds over number fields*.
- The Mini-workshop ”Calabi–Yau Varieties and Mirror Symmetry”, October 30–31, 1998, Tsuda College, Japan : *Arithmetic aspects of Calabi–Yau varieties and mirror symmetry*.

- The NATO/ASI "The Geometry and Arithmetic of Algebraic Cycles", June 7–19, 1998, Banff, Canada: *The L-series, periods, and the special values of L-series of certain Calabi–Yau varieties*

1997

- The Summer School on "Mirror Symmetry Conjecture and Geometric Langlands Program", August 7–11, 1997 at Yatsugatake, Japan: *Arithmetic of certain Calabi–Yau type varieties and their mirrors*

1996

- AMS October Meeting at Lawrenceville October 1996, Special Session on Mirror Symmetry: *Arithmetic of certain Calabi–Yau type varieties over number fields.*
- AMS October Meeting at Lawrenceville October 1996, Special Session on Elliptic Surfaces: *Arithmetic of mirror images of certain K3 surfaces.*
- Japanese Mathematical Society at Yamagata July 1996, Algebra Section Meeting: *The Monster, Thompson series, and Applications.*
- CMS Summer Meeting Calgary June 1996, Special Session on Brauer Groups : *On "Brauer numbers" of certain weighted diagonal hypersurfaces over finite fields.*

1995

- AMS November Meeting at Kent Ohio November 1995 : Special Session on Arithmetic Algebraic Geometry : *Arithmetic of certain Calabi–Yau manifolds over number fields.*
- The Fields Institute "Arithmetic Algebraic Geometry" October 1995 : *Arithmetic of certain Calabi–Yau manifolds.*
- The Miniworkshop on Galois Theory, University of Pennsylvania October 1995 : *Singular moduli of Thompson series and construction of dihedral Galois fields.*
- AMS March Meeting Hartford Connecticut 1995 : Special Session on Enumerative Geometry, Toric Varieties and Mirror Symmetry : *Arithmetic of Calabi–Yau hypersurfaces.*

1994

- CNTA '94 Halifax, July 1994, Special Session Computational Number Theory: *Computing special values of zeta- and L-functions of algebraic varieties.*
- The Conference of L-Functions, March 1994, the Fields Institute: *Special Values of Zeta-Functions of Diagonal Hypersurfaces over Finite Fields.*

1993

- Monster Bash, Ohio State University, May 1993: *Singular values of Thompson series*

1992

- CMS Winter Meeting, December 1992: *The Arithmetic of diagonal hypersurfaces (The Lichtenbaum–Milne conjecture).*

≤ 1990

- AMS Summer Research Conference : Computational Number Theory, July 1988: *Fermat motives and Jacobi sums.*
- AMS Summer Research Conference : Computational Number Theory, August 1985: *On the constructive realization of certain Frobenius groups as Galois groups.*
- AMS South East Regional Meeting, Richmond, April 1984: *A constructive approach to the inverse Galois problem.*

- AMS Summer Meeting, Toronto, June 1982: *On the product of two Fermat curves over finite fields.*
- Oberwolfach : Algebraische Zahlentheorie, August 1981: *Fermat surfaces over finite fields.*
- Tsuda College : Number Theory, July 1979: *Elliptic curves and formal groups.*

PRESENTATIONS

Numerous seminar presentations at University of Copenhagen, Universität des Saarlandes, Ohio State University, University of Toronto and Queen's University while I was/am affiliated to the respective institutions. Some external presentations are listed as follows.

- CNTA 5, August 1996: *On the Brauer numbers of weighted diagonal and quasi-diagonal hypersurfaces over finite fields.*
- ICM 94, Poster Session, August 1994 : *Singular values of Weber modular functions.*
- The 78-th Ontario Mathematics Meeting, February 1987: *The Brauer group of a $K3$ surface over finite fields.*
- The Third MACSYMA Users' Conference, July 1984: *On the modular equation of order 11.*
- Canadian Mathematical Congress, May 1982: *The Atkin and Swinnerton-Dyer congruences for Jacobi quartics.*
- AMS Annual Meeting at Cincinnati, Session in Algebraic Geometry and Algebra, January 1982: *The arithmetic of Fermat surfaces over finite fields.*
- Algebraic Geometry Meeting, Copenhagen April 1980: *On Fermat surfaces.*
- AMS Meeting at New York City, Session in Algebraic Geometry, April 1979: *On the p -divisible groups arising from Fermat curves.*
- The 51-st Ontario Mathematics Meeting, March 1979: *On the p -divisible groups arising from Fermat curves.*
- The Laurentian Ring Theory Seminar, November 1978: *Elliptic curves.*
- The International Congress of Mathematicians at Helsinki, Short Communications, August 1978: *On the p -divisible groups attached to algebraic curves of genus 3.*
- Algebraic Geometry Summer Meeting at Copenhagen, August 1978: *Formal groups and some arithmetic properties of elliptic curves.*

OTHER RESEARCH ACTIVITIES

Refereeing:

- Referee a large number of papers per year in the capacity of the managing editor for *Communications in Number Theory and Physics* (2006–Present)
- Referee more than twenty papers per year in the capacity of a Co-Editor-in-Chief of *Canadian Mathematical Bulletin* (2000–2005)
- Scientific journals: I have served as a referee or been consulted by editors for the following scientific journals:
 - Acta Arithmetica
 - Advances in Mathematics
 - Allahabad Math. Journal
 - American Journal of Mathematics
 - Annali di Matematica Pura ed Applicata (AMPA)
 - Australian Journal of Mathematics
 - Bulletin of London Mathematical Society
 - Canadian Journal of Mathematics
 - Canadian Mathematical Bulletin
 - Communications in Mathematical Physics
 - Communications in Number Theory and Physics
 - Developments of Mathematics
 - Duke Mathematical Journal
 - Experimental Mathematics
 - Finite Fields and Their Applications
 - Geometry and Topology
 - Glasgow Journal of Mathematics
 - International Journal of Mathematics and Mathematical Sciences
 - International Journal of Number Theory Acta Arithmetica
 - International Journal of Theoretical Physics
 - International Mathematical Research Notes
 - Israel Journal of Mathematics
 - Journees Arithmetiques
 - Journal of Algebra
 - Journal of Algebra and Applications
 - Journal of Algebraic Geometry
 - Journal of Differential Geometry
 - Journal of Geometry and Physics
 - Journal of Number Theory
 - Journal of Algebra and Number Theory
 - Journal für Reine Angewandte Mathematik (Crelle Journal)
 - Journal of Physics A, Mathematical and Theoretical
 - Journal of Symbolic Computation
 - Manuscripta Mathematica
 - Mathematica Scandinavica
 - Mathematische Annalen
 - Mathematische Nachschriften

- Mathematical Reports of the Royal Society of Canada
- Mathematica Slovaca
- Nagoya Journal of Mathematics
- LuCaNT
- Okasa Journal of Mathematics
- Pacific Journal of Mathematics
- Proceedings of the American Mathematical Society
- Qualitative Theory of Dynamical Systems
- Quarterly Journal of Pure and Applied Mathematics
- The Ramanujan Journal of Mathematics
- Real Academia de Ciencias, Madrid
- Reviews in Mathematical Physics
- Revista Matematica Iberoamericana
- Saitama Mathematical Journal
- Transformation Groups
- Transactions of the American Mathematical Society
- Tôhoku Mathematical Journal
- Tokyo Journal of Mathematics
- Conference Proceedings:
 - Calabi–Yau manifolds, Arithmetic, Geometry and Physics, Pune, India
 - The Algebra and Number Theory Conference at University of Hyderabad, India
 - Modular Forms and String Duality,
BIRS June 3–8, 2006.
 - Mirror Symmetry V, the Workshop on Calabi–Yau Varieties and
Mirror Symmetry, BIRS December 6–11, 2003.
 - The Workshop on Calabi–Yau Varieties and Mirror Symmetry,
The Fields Institute July 23–29, 2001.
 - The Moonshine Workshop, Montreal 1999.
 - The NATO ASI/CRM Summer School 1998: The Arithmetic and
Geometry of Algebraic Cycles.
 - The Canadian Number Theory Association III Kingston, 1991,
IV Halifax 1994, and V Carleton University Ottawa 1996.
 - ISSAC 90 Oregon
 - International Conference on Number Theory, Quebec 1987
- Monographs, Lecture Notes, Books:
 - The CRM (Montreal) Monograph and Lecture Notes Series. Member of the
Editorial Board.
 - The Fields Institute Monograph and Lecture Notes Series. Member of the
Editorial Board.
 - Cambridge University Press, research monograph on Number Theory
and Physics. A referee.
 - Cambridge University Press, textbook for undergraduates. A referee.
 - World Scientific Publisher. Refereeing a number theory textbook

I referee about 10 – 20 papers for journals and conference proceedings per year in average.

- Research Grants:

- NSF
- NSERC
- CRC Tier I and Tier II
- NSA, NSA–AMS
- ERC (European Research Council)
- University of Western Ontario Academic Development Funds
- NRF (South African National Research Council)
- NWO (The Netherlands Organization of Scientific Research) Vidi Grants
- FONDECYT (Chilian Research Council)
- NCN (National Science Center, Poland)
- UKRI (UK Research and Innovation), EPSRC
- Royal Society of London

I referee about 3 – 5 grant applications per year in average.

- Scholarships:

- Major Entrance Scholarships for Queen’s University, since 2002.
- Ontario Graduate Scholarship (OGS), since 2006.

- Conference proposals:

- Fields Institute 1-week workshop
- BIRS 5-Days Workshops.
- ICMS (International Centre for Mathematical Sciences) Edinburgh 1-week workshops

- Awards and Prizes:

- Inamori Foundation Kyoto Prizes
- NSERC Steacie Research Fellowships
- Canada Council Killam Research Fellowships
- International Congress of Chinese Mathematicians (ICCM 2019) Gold and Silver Medals
- The Morningside Awards of Mathematics, China
- National Killam Program: Killam Prizes

- A member of the 2010 ICM Selection Panel of invited speakers for the Section of Number Theory.

- Danish Ministry of Education: Outside Examiner (Censor) for Mathematical Examinations, 2002–2014 (March).

- University of Hannover, Department of Mathematics and Physics: GRK 1463 Analysis, Geometry and String Theory. External Member. 2008–present.

- Assessment Committee for Professorship (external): Univeristy of Copenhagen, Faculty of Science, Assessing Committee for

Professorship in Algebraic Number Theory in the Institute of Mathematics, since 2001.

- Assessment Committee for Associate Professorship (external)
University of Copenhagen, Faculty of Science, Associate Professorship in Algebraic Number Theory in the Department of Mathematics, 2013.
- Tenure, promotion, renewal, etc (external):
 - Dr. Fernando Q. Gouvêa, for tenure and promotion to Full Professor at Colby College, USA
 - Dr. Yasuhiro Goto, for tenure at Hokkaido University of Education, Japan
 - Dr. Jan Stienstra, for promotion to senior ranks at University of Utrecht, the Netherland
 - Dr. M. Bhargava, for appointment as Associate Professor without tenure at Princeton University, U.S.A. Later, for appointment as Full Professor with tenure at the same institution
 - Dr. Ling Long, appointment as Assistant Professor at University of California at Merced, USA
 - Dr. Abdellah Sebbar, promotion to Associate Professor at University of Ottawa, Canada
 - Dr. Xi Chen, promotion to Associate Professor at University of Alberta, Canada
 - Dr. Daqing Wan, promotion from rank V to rank VI professor at University of California at Irvine, USA
 - Dr. John Swallow, promotion to Full Professor at Davidson College, USA
 - Dr. Arne Ledet, for tenure and promotion to Associate Professor at Texas Tech University, USA
 - Dr. Katia Consani, to a Full Professor with tenure at Rutgers University, USA
 - Dr. Matt Szczesy, for tenure and promotion to Associate Professor at Boston University, USA
 - Dr. Adrian Clinger, for tenure and promotion to Associate Professor at University of Missouri–St. Louis, USA.
 - Dr. Charles F. Doran, to a Full Professor at University of Alberta, Canada.
 - Dr. Abdullah Sebbel, to a Full Professor at University of Ottawa, Canada.
 - Dr. Razu Laza, for tenure and promotion to Associate Professor at State University of New York at Stony Brook, USA.
 - Dr. Andrew Schultz, for tenure at Wellesley College, USA.
 - Dr. Andreas Malmendier, for tenure at Utah State University, USA.
 - Dr. David Favero, for tenure at University of Alberta, Canada.
 - Dr. Daqing Wan, for advancement to Professor Above Scale, University of California, Irvine, USA.
 - Dr. Jeng-Daw Yu, for the 2019 Morningside Awards of Mathematics, Gold Medal.
 - Dr. Christell Vincent, for reappointment at University of Vermont, USA.
 - Dr. Adrian Clinger, for promotion to Full Professor at University of Missouri–St. Louis, USA.
 - Dr. Jie Zhou, for promotion for tenure and promotion to Associate Professor,

Yau Center, Tsinghua University, China.

- Dr. Sandip Singh, for promotion to the rank of Associate Professor at Indian Institute of Technology, Bombay, India.
- Dr. Xi Chen, for promotion to Full Professor at University of Alberta, Canada.
- Dr. Daniel Persson, for promotion to Full Professor at Chalmers University of Technology, Gothenberg, Sweden.
- Dr. Masha Vlasenko, for promotion to a permanent position The Institute of Mathematics of the Polish Academy of Sciences, Poland.
- Dr. Robert Osburn, for promotion to a Professor at University College Dublin, Ireland.

Reviewing: I have been serving as a reviewer for

- The Mathematical Reviews
- Zentralblatt für Mathematik
- Bulletin of the American Mathematical Society
- Canadian Mathematical Society Notes

I review annually about 30 articles, and books.

Editorship:

- I edited (with F. Q. Gouvêa) the Proceedings of the third conference of the Canadian Number Theory Association 1991. The book titled *Advances in Number Theory* [38] has been published from Oxford University Press, May 1993.

- I edited (with J. Lewis, B. Gordon, S. Müller-Stach and S. Saito) the Proceedings of the NATO ASI on *The Arithmetic and Geometry of Algebraic Cycles* at Banff Alberta Canada June 7–19, 1998. The Proceedings consist of two volumes. The volume I has been published in NATO ASI Series Vol. **548**, 2000 from the Kluwer Academic Publishers, and the volume II has been published in the CRM Proceedings and Lecture Notes Series Vol **24**, 2000 from the American Mathematical Society.

- I edited a monograph of Spencer Bloch on “Higher Regulators, algebraic K -theory, and zeta-function of an elliptic curve” and a monograph of José I. Burgos on “The regulators of Beilinson and Borel” for the CRM Monograph series. These two monographs are spin-offs of the Banff Conference *The Arithmetic and Geometry of Algebraic Cycles*, 1998. Spencer Bloch’s monograph has appeared in the CRM Monograph Series Vol. **11** (2000) from the American Mathematical Society, and Burgos’ monograph has appeared in the CRM Monograph Series Vol. **15** (2001) from the American Mathematical Society.

- I served as a co-editor-in-chief (with A. Pianzolo and J.D. Lewis) for the Canadian Mathematical Bulletin for the period January 2001–December 2005.

- I edited with James D. Lewis the Proceedings of the Fields Workshop *Arithmetic, Geometry and Physics around Calabi–Yau Varieties and Mirror Symmetry, July 23–29, 2001*. This has been published as the Fields Communication Series Volume **38** from American Mathematical Society in October 2003.

- I was an editor and a referee for the research monograph in the CRM Monograph Series by Pilar Bayer and Montse Alsina entitled *Arithmetic of Quaternionic Orders and Hyperbolic Uniformization of Shimura Curves*. This monograph has appeared as the CRM Monograph Series **22** in 2004 from American Mathematical Society.

- I was the principal editor in collaboration with S.-T. Yau and James Lewis for the Proceedings of the BIRS Workshop on “Calabi–Yau Varieties and Mirror Symmetry”, December 6–11, 2003. The book has been published from American Mathematical Society/International Press in AMS/IP Advanced Studies in Mathematics Series **38**, as *Mirror Symmetry V* in December, 2006.

- I served as an official editor of the publication of CRM Monographs and Lecture Notes Series. I have been involved in the CRM publications as an editor since 1998. My editorship duty at CRM ended in November 2013.

- I served as an official editor for the Fields Publication Series from January 2005 to February 2021.

- I served in the editorial board of the Fields Institute Publications. In particular, I was responsible for the publication of three monographs. The monograph by Arne Ledet entitled *Brauer Type Embedding Problems* has appeared as the Fields Institute Monograph **21** from the American Mathematical Society in the spring of 2005. The second monograph by Christian Meyer entitled *Modular Calabi–Yau Threefolds* has appeared as the Fields Institute Monograph Series **22** from the American Mathematical Society in the fall of 2005. The third monograph by Kenji Ueno entitled *Conformal Field Theory with Gauge Symmetry* has appeared from the American Mathematical Society in September 2008.

- Since 2007, I have been the founding managing editor of a new electronic journal *Communications in Number Theory and Physics*. The editors-in-chief are R. Dijkgraaf, D. Kazhdan, M. Kontsevich and S.-T. Yau. The journal is published from International Press. The inaugural issue has been published in March 2007 with the article of Kapustin and Witten.

- I served as the principal chief with C. Doran and H. Verrill of the Proceedings of the BIRS 5 Day Workshop “Modular Forms and String Duality”. This has been published as the Fields Institute Communication Series **54** in 2008 from American Mathematical Society.

- I served as a co-editor with R. Laza and M. Schuett for the Proceedings of the Fields Institute Workshop on “Arithmetic and Geometry of K3 surfaces and Calabi–Yau threefolds”. This has appeared in the Fields Institute Communication Series **67** in 2013 from Springer.

- I served as a co-editor with R. Laza and M. Schütt on lectures notes of the concentrated graduate courses for the Fields thematic program on Calabi–Yau Varieties: Arithmetic, Geometry and Physics. The lecture notes has appeared in the Fields Institute Monograph Series Vol. **34** in 2015 from Springer.

- I am serving as a co-editor with C. Doran and L. Long for the proceedings of a trimester program on “Calabi–Yau manifolds: Geometry and Arithmetic” at Pune, India.

Translating mathematical papers:

- I translated with P.S. Milojevic and G. A. Elliott the paper titled *Instantons and sheaves on $\mathbb{CP}^3$* by V.G. Drinfeld and Yu.I. Manin from Russian to English. The translated version appeared in “Algebraic Geometry” (Proc. Summer Meeting, University of Copenhagen 1978), Lecture Notes in Mathematics **732**, pp. 60–81, Springer–Verlag 1979.

- I arranged the translation of Alan Baker’s book *Introduction to Number Theory* into Japanese by K. Katayama. The Japanese Edition has been published from Science Publishing Company in 1992.

- I arranged the translation of Jan Cassels book *Elliptic Curves* into Japanese by H. Toku-naga. The translated version appeared in January 1996 from Iwanami Shoten.

Author of articles to the general mathematical reader

- *Mathematics in Canada*, Sugakutsushin **10**, no.3 (2006), Mathematical Society of Japan.

Organizing conferences, workshops, symposia and seminars:

- Special Program at Research Institute:
 - The Fields Institute Thematic six months program: Calabi–Yau Varieties: Arithmetic, Geometry and Physics
July–December 2013. The principal organizer
(with M. Gross, S. Gukov, R. Laza, M. Schuett, J. Walcher and S.-T. Yau)
 - The Erwin Schroedinger Institute (ESI), Vienna : Number Theory and Physics
Two months in 2009. A co-organizer (with A. Connes and D. Kreimer)
 - The Fields Institute Thematic year Program: The Geometry of String Theory
August 2004–July 2005. A member of the scientific committee
 - The Fields Institute Weekend Workshops on “Higher Dimensional Geometry (Algebraic Varieties)
(with Special Emphasis on Calabi–Yau Varieties and Mirror Symmetry)
January, March, September 2003; March, October 2004;
March, October 2005; March, October 2006, November 2007;
March, November 2008; 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016
An organizer (with James Lewis)
 - The Fields Institute Research Seminars: “Calabi–Yau Varieties and Mirror Symmetry” January–May 2003
An organizer (with Stefan Müller-Stach)
 - MSRI Berkeley Special One-Semester Program “Algorithmic Number Theory”
Fall 2000, An organizer (with J. Buhler, C. Dwork, H. Lenstra Jr.,
A. Odlyzko and B. Poonen)
- 5 • Conferences and Symposia:
 - Workshop on “Calabi–Yau Varieties and Related Topics”
Tokyo Metropolitan University, Japan
2026i, July
A co-organizer (with Y. Goto, A. Kanazawa, Y. Konishi and H. Tokunaga)
 - Workshop on “Calabi–Yau Varieties and Related Topics”
Tsuda University, Japan
2025, July
A co-organizer (with Y. Goto, A. Kanazawa and Y. Konishi)
 - Silver Workshop 7 on “Complex Geometry and Related Topics”
University of Tokyo
2025, March
A co-organizer (with S. Hikami, and K. Saito)
 - Silver Workshop 6 on “Complex Geometry and Related Topics ” at OIST
August 7-9, 2023
A co-organizer (with S. Hikami, and K. Saito)
 - Workshop on “Calabi-Yau Varieties and Related Topics” at Hokkaido
University, Japan

July 22-23, 2023

A co-organizer (with M. Asakura, Y. Goto, and S. Hosono)

- Silver Workshop 5 on “Complex Geometry and Related Topics” at OIST
November 9-11, 2022

A co-organizer (with S. Hikami, and K. Saito). (Online workshop)

- BIRS workshop on “Modular Forms in Number Theory and Physics”
at WIAS, Hangzhou, China
September 20–25, 2020

(postponed to 2022; eventually cancelled due to COVID)

A co-organizer (with L. Long, J. Top, and W. Zudilin)

- Silver Workshop 4 on “Complex Geometry and Related Topics ” at OIST
January 11-12, 2022

A co-organizer (with S. Hikami, and K. Saito). (Online workshop)

- Workshop on “Calabi–Yau varieties and Related Topics” at Gukushuin
University, Japan
October 13–14, 2021

A co-organizer (with Y. Goto and S. Hosono). (Online workshop)

- Working Workshop on “Calabi–Yau Manifolds, Mirror Symmetry and Related
Topics” at Hokkaido University of Education at Hokodate
August 8-9, 2019:

The principal organizer (with Y. Goto and S. Hosono)

- Silver Workshop 3 on “Complex Geometry and Related Topics ” at OIST
February 28-29, 2019:

The principal organizer (with S. Hikami, and K. Saito)

- Working Workshop on “Calabi–Yau Manifolds, Mirror Symmetry and Related
Topics” at Gakushuin University, Japan
August 9-10, 2018:

The principal organizer (with Y. Goto and S. Hosono)

- OIST Silver Workshop on “Complex Geometry and Related Topics”
at Tokyo University
July 27, 2018:

A co-organizer with (S. Hikami and K. Saito)

- Tsuda College–Gakushuin University Joint Workshop on
“Calabi–Yau Manifolds and Related Topics”
August 7-8, 2017:

The principal organizer (with Y. Goto, S. Hosono and K. Matsuno)

- BIRS Workshop on “Modular Forms in String Theory”
September 25-30, 2016:

The principal organizer (with C. Doran, Y. Goto and L. Long)

- OIST–Tsuda College Joint-Workshop on “Calabi–Yau Manifolds and
Number Theory”, at University of Tokyo and Tsuda College,
August 1-3, 2016:

A co-organizer with (K. Mtsuno, and T. Oda)

- The Fields Institute Retrospective Workshop on “Calabi–Yau Varieties:
Arithmetic, Geometry and Physics”, at Herstmonceux Castle, England
June 20-25, 2016:

- The principal organizer (with M. Gross, R. Laza, M. Schuett)
- Tsuda College Mini-Workshop on “Calabi–Yau Varieties :
Arithmetic, Geometry and Physics”
August 7-8, 2014:
The principal organizer
- The Fields Institute Workshop/Summer School on
“Arithmetic and Geometry of K3 surfaces and Calabi–Yau threefolds”
August 16-25, 2011:
An organizer with (C. Doran, J. Lewis, M. Schuett and S. Kondo)
- BIRS Workshop on “Number Theory and Physics at the Crossroads”
May 8-13, 2011:
The principal organizer (with V. Batyrev, C. Doran, S. Gukov and D. Zagier)
- Tsuda College, Workshop on ”Number Theory, Geometry and Physics”
August 30-31, 2010:
The principal organizer
- BIRS Workshop on “Number Theory and Physics at the Crossroads”
September 21-25, 2008:
The principal organizer (with C. Doran, S. Gukov and D. Zagier)
- Tsuda College, Workshop on ”Number Theory and Physics at the Crossroads”
August 4-6, 2008:
The principal organizer
- Clay Mathematics Institute Workshop : Number Theory and Physics
2008 Spring: Boston University
A co-organizer (with A. Carey, D. Kreimer, S. Rosenberg)
- CMS Winter Meeting Toronto “Calabi–Yau Varieties and Mirror Symmetry”
December 2006:
The principal organizer (with James D. Lewis)
- Tsuda College, Workshop on “Modular Forms, Calabi–Yau Varieties and
String Duality”
August 2-3, 2005:
The principal organizer
- BIRS Workshop on “Modular Forms and String Duality”
June 3-8, 2006:
The principal organizer (with C. Doran and H. Verrill)
- Tsuda College, Workshop on “Modular Forms, Calabi–Yau Varieties and
String Duality”
June 11-12, 2005:
The principal organizer
- Perimeter Institute, Workshop on “Mirror Symmetry”
November 19-23, 2004:
An organizer (with D. Auroux, M. Gross and K. Hori)
- Tsuda College, Workshop on “Calabi–Yau Varieties and Mirror Symmetry”
July 17-19, 2004:
The principal organizer
- BIRS A week-long workshop on “Calabi–Yau Varieties and Mirror Symmetry”
December 6-11, 2003:

- An organizer (with V. Batyrev, S. Hosono, J. Lewis, B.-H. Lian, S.-T. Yau and D. Zagier)
- The Fields Institute Workshop “Arithmetic, Geometry, Physics around Calabi–Yau Varieties and Mirror Symmetry”, July 23–29, 2001:
 - An organizer (with V. Batyrev, S. Hosono, J. Lewis, B. Lian and S.-T. Yau)
- The CMS Winter Meeting 1998: Special Session in Number Theory, Kingston, A co-chair (with Ram Murty)
- Mini-workshop at Tsuda College October 1998:
 - “Calabi–Yau Varieties and Mirror Symmetry Conjecture”
 - A principal organizer
- The NATO ASI on “Arithmetic and Geometry of Algebraic Cycles 1998, Banff Centre for Conferences:
 - A member of the organizing committee (with B. Gordon, J. Lewis, S. Müller-Stach, S. Saito)
- The Canadian Number Theory Association, the third conference 1990:
 - A principal organizer
- The 78-th Ontario Mathematics Meeting at University of Toronto 1987:
 - A member of the organizing committee
- Summer Meeting in Algebraic Geometry at Copenhagen 1978:
 - A member of the organizing committee
- Seminars:
 - Department Colloquia, Queen’s University 1995–1998: Chair, 2001–2004 Co-Chair
 - Research Seminar on “Calabi–Yau Varieties and Mirror Symmetry, Queen’s University, 2000–Present: the principal organizer
 - Number Theory Seminar, Queen’s University 1996–2000:
 - A member of the organizing committee
 - Arithmetic Seminar, Queen’s University 1991–1998: the principal organizer
 - Arithmetical Algebraic Geometry Seminar, Queen’s University 1988–2000: the principal organizer
 - Algebra and Number Theory Seminar, Queen’s University 1987–1990: the principal organizer
 - Number Theory Seminar, University of Toronto 1983–1987:
 - A member of the organizing committee
- Public Lectures
- Public Lectures at Queen’s University:
 - *Elliptic Curves and Fermat’s Last Theorem*, by Andrew Wiles, May 1997.
 - *An Australian past*, Women in Mathematics Seminar, by Paula Cohen, February 1996.
 - *Algebraic Geometry for Scientists and Engineers*, by Shreeram S. Abhyankar, December 1995.
 - *Fermat’s Last Theorem*, by Fernando Q. Gouvêa, November 1994
- Public Lectures at the Fields Institute:

- *Escher and the Droste Effect*, by Hendrik Lenstra, CNTA 8 Toronto, June 2004.
- I arranged for Dr. A. Wiles to receive an honorary degree from Queen's University at the spring convocation of 1997.

MEMBERSHIP

- The American Mathematical Society: Member
- The Japanese Mathematical Society: Member
- The Danish Mathematical Society (DMF): Member
- The Canadian Mathematical Society: Member
- The London Mathematical Society: Member

TEACHING EXPERIENCE

• Undergraduate Courses

- Calculus
- Vector Calculus
- Linear Algebra
- Algebraic Methods
- Number Theory (*p-adic L-functions* by K. Iwasawa)
- Our Number System—an Advanced Perspective
- Real Analysis
- Fourier Series
- Ordinary Differential Equations
- Abstract Algebra
- Groups, Rings and Fields
- Complex Analysis
- Introduction to Cryptography
- Introduction to Galois Theory and Inverse Galois Problem (*Galois Theory* by J. Rotman, and *Generic Polynomials* by C.U. Jensen, A. Ledet and N. Yui)
- Topics in Mathematics (Galois Theory and the Inverse Galois Problem)
- Introduction to Number Theory (*The Higher Arithmetic* by H. Davenport)
- Arithmetic of Elliptic Curves (*The Arithmetic of Elliptic Curves* by J. Silverman)
- Algebraic Number Theory (*A Classical Introduction to Modern Number Theory* by K. Ireland and M. Rosen)
- Zeta Functions (*An Invitation to Arithmetic Geometry* by D. Lorenzino)
- Reading courses on various books (e.g., *Enumerative geometry and string theory* by S. Katz)
- Reading courses on mirror symmetry for elliptic curves
- Introduction to Coding Theory, by R. Roth

• Graduate Courses

- Core Algebra I, 2018, 2017 and 2015 September–December
- Core Algebra II, 2025 January–April, 2020 January–April, 2017 January–April
- Calabi–Yau Varieties: Arithmetic and Mirror Symmetry, CIMAT, Mexico, 2016 March–April
- Abstract Algebra, 2015 and 2014 September–December
- Concentrated Graduate Courses on the modularity of Calabi–Yau varieties over $\mathbb{Q}$, University of Copenhagen, 2010 September 27–October 1
- Calabi–Yau Varieties and Mirror Symmetry, 2001 September–2015 May
- Constructive Aspects of the Inverse Galois Theory, 2000 January–April (with A. Ledet)
- The Monster, K3 surfaces and Mirror Maps, 2000 January–April.
- Topics in Galois Theory, 1999 January–April (with A. Ledet)
- Topics in Algebraic Number Theory, 1999 January–April (with Y. Petridias and A. Ledet)

- Mathematics for Coding and Cryptography, 1997 September–December.
- Zeta-Functions, 1996 September–December.
- Topics in Number Theory, 1996 January–April.
- Modular Forms, Elliptic Curves and Galois Representations, 1994 September–1995 April.
- The Constructive Aspects of the Inverse Galois Problem: A concentrated graduate course at Tsuda College, 1992 May–June.
- Arithmetic Geometry, 1992 January–April.
- Theory of Commutative Formal Groups and its Application to Arithmetical Algebraic Geometry: A concentrated graduate course at Tsuda College, 1989 May–June.
- Arithmetic of Algebraic Varieties in Low Dimensions and Commutative Formal Groups, 1989
- Arithmetic of Elliptic Curves: A concentrated graduate course at Tsuda College, 1988 May–June.
- Structure of Algebras (Arithmetic of Elliptic Curves), 1987 January–April.
- The Arithmetic of Elliptic Curves: University of Toronto, 1986 January–April.
- The Arithmetic of Algebraic Curves: A concentrated graduate course at Tsuda College, 1986 May–June.
- Introduction to Algebraic Geometry: Ohio State University, 1982 January–April.
- Elliptic Curves and Formal Groups of Dimension One: Ohio State University, 1981 September–December.
- Elliptic Curves and Formal Groups of Dimension One : Universität des Saarlandes, 1980 October–1981 May.
- Introduction to the Theory of Modular Forms and its Application to Elementary Particle Physics: A series of lectures at Niels Bohr Institute, Copenhagen, 1976–1977

ADMINISTRATIVE EXPERIENCES

• **Queen's University**

Departmental:

- ACOP Committee 2016–2018
- Coleman Postdoctoral Committee 2014, 2006
- Curriculum Committee 2026–2027, 2010–2014, 2004–2005,
- Colloquium Chair Co-Chair 2001–2004, 1994–1998
- Computing Committee Chair 2005–2008, 1994–1995
- Research Committee 1990–1993, 1987–1989
- Graduate Committee 2022–2026, 2018–2020, 2014–2016,
2008–2010, 1995–1999, 1988–1990
- Graduate Co-Coordinator (with R. Erdahl) 1996–1999
- Appointment Committee 1999–2002
- Library Committee 2002–2010
- RTP Committee 2018–2021

University:

- FAS EDI Committee 2025.
- Internal Academic Review for the Department of Mathematics and Statistics:
The coordinator 2008–2009 (**Declined**).
- Queen's Major Entrance Scholarships and Awards:
Member of the selection committee 2023, 2017, 2008, 2006, 2005, 2003, 2002
- Internal Academic Review Team for the Department of Classics:
Member 2003–2004 (January)
- Internal Academic Review Team for the Department of Computing
and Information Science: Member 1999–2000
- Graduate Council: Division IV Representative 1996–1999
- Advisory Research Committee: Department Representative 1996–1999
- Head Search Committee: Mathematics and Statistics 1989

Others:

- Fields Institute Representative, 2023
- Coordinator of Tsuda College–Queen's University Graduate
Exchange Program, 1995–2011

• **University of Toronto**

Departmental:

- Department Council 1986–1987
- Library Committee 1984–1986
- Graduate Committee 1982–1984

• **Professional Organizations**

- The Fields Institute, a member of the selection committee of Fields Fellows 2012.
- ICM 2010 (International Congress of Mathematicians), Hyderabad, India.
A core member of the panel for Section 3 (Number Theory), 2008–2010.
- ICCM 2007 (International Congress of Chinese Mathematicians), Hangzhou,
China. Writing a New Mathematics Awards citation for Dr. Jeng-Daw Yu.

- Communications in Number Theory and Physics (a research journal published by International Press), the managing editor, 2006–present
- The Canadian Mathematical Society:
 - CMS Notes Research Editor, 2002–2003, 1998–2000,
 - Canadian Mathematical Bulletin, Editor-in-Chief (with J.D. Lewis and A. Pianzola), 2001–2005
- Inamori Foundation, Kyoto Japan:
Jury for Kyoto Prize in Sciences, since 1991.
- Research Institutes:
 - CRM Montreal, Editorial Board of CRM Publications, 2004 September–2013 December.
 - The Fields Institute Publications, Editorial Board, 2005 January–present.