

CHARLES DORAN

*Professor of Mathematics, University of Alberta. Distinguished Visiting Professor of Mathematics and Physics, Bard College.
Associate Member, Center of Mathematical Sciences and Applications, Harvard University.*

Leading research mathematician committed to advancing STEM and promoting Equity, Diversity, and Inclusion (EDI) in the sciences. Spanning theoretical physics and mathematics with significant contributions to algebraic geometry, string theory, and mathematical physics. PhD, AM, and AB in Mathematics from Harvard University. Full professor with tenure at the University of Alberta, prior faculty positions include U.W., Columbia, and Penn State with visiting positions at Harvard, Brown, the U. Maryland. Currently distinguished visiting professor at Bard College. Secured support for interdisciplinary projects in mathematics, science and the humanities, including CAD \$5.75 million (~ \$4.15 million) grant for collaborative research in mathematics and statistics. Founded programs to inspire students in math and the sciences, fostering inclusive environments for underrepresented groups in STEM.

FOUNDER AND DIRECTOR

Interdisciplinary Science Postbaccalaureate Research Accelerator (ISPRA) (2023-present)

Founded innovative program to increase the number of undergraduates with a liberal arts background entering graduate studies in Mathematics and Science. This transformational research experience aims to make these students competitive with research focused institutions by funding an additional year of research and mentoring. Continuing my commitment to advance equity in STEM, this inclusive initiative will focus on groups underrepresented in the sciences, including first generation college students.

Diversity in Research Experiences Across Mathematics (DREAMs) (2023-present)

DREAMs aims at the junction between high school and university for highly motivated, talented underrepresented students with demonstrated interest in mathematics. The overarching mission of DREAMs is to give these students experience with mathematical research and inspire postsecondary studies and careers in mathematical disciplines or related STEM fields. This three-week program is comprised of lectures on topics such as paradoxes in special relativity and exploring the topology of higher-dimensional spaces. Interactive activities, mentoring sessions, and a capstone student research project on topics from linear algebra to topology provide meaningful exposure to university-level mathematics. The DREAMs program was established through generous funding from the PromoScience grant for advancing mathematics education during critical transitional periods.

Alberta Summer Mathematics Institute (ASMI) (2009-2016)

Founded and directed registered nonprofit program for students grades 10 to 12. My vision was to introduce mathematical exploration and research in an inclusive, tuition-free environment. For four weeks each summer, ASMI was hosted at the University of Alberta campus. Students were mentored by eminent guest lecturers from leading international institutions and gained firsthand experience through their own research projects. Under my leadership, ASMI quickly became a launching pad for budding research mathematicians, providing them with this formative opportunity early in their academic journeys. The program also funded postdoctoral and graduate students to serve as advisors (and some becoming co-directors), supporting their professional development.

EDUCATION

Harvard University, Mathematics, PhD Mathematics, 1999

Advisors: Barry Mazur and Shing-Tung Yau.

Thesis: Picard-Fuchs Uniformization and Geometric Isomonodromic Deformations: Modularity and Variation of the Mirror Map

AM Mathematics, 1993. AB Mathematics, 1992

FACULTY POSITIONS

University of Alberta, Mathematical and Statistical Sciences

Full Professor with tenure, 2013-present. McCalla Professor of Science, 2013-2014

Associate Professor with tenure, 2008-2013

University of Washington, Mathematics

Affiliate Associate Professor, 2009-2011. Assistant Professor, 2003-2008

University of Washington, Physics

Adjunct Assistant Professor, 2006-2008

Columbia University, Mathematics

VIGRE/Ritt Assistant Professor, 2000-2004. Advisors: Brian Greene and John Morgan

The Pennsylvania State University, Mathematics.

S. Chowla Research Postdoctoral Fellow, 1999-2000. Advisor: Jean-Luc Brylinski

VISITING FACULTY APPOINTMENTS

Bard College, Mathematics Program

Distinguished Visiting Professor of Mathematics and Physics, Jan. 2022-present

Harvard University, Center of Mathematical Sciences and Applications (CMSA)

Associate Member, Jul. 2019-present. Visiting Scholar, Jul. 2018-Dec. 2018

Brown University, Institute for Computational and Experimental Research in Mathematics (ICERM)

Visiting Professor, 2017-2018

University of Maryland, Department of Physics

Visiting Campobassi Professor, 2015-2017

STRATEGIC PARTNERSHIPS AND RESEARCH FUNDING

NSERC Collaborative and Thematic Resources Support in Mathematics and Statistics

Co-PI on Pacific Institute for the Mathematical Sciences (PIMS) Grant, CAD \$5,750,000 (2014-2019)

PIMS Collaborative Research Grant in Geometry and Physics PI CAD \$224,900 (2013-2016)

National Science Foundation \$100,000 (2014) To support US participation at String-Math 2014 events in Canada

Alberta Advanced Education and Technology

Co-PI on PIMS Grant, CAD \$1,210,000 (2010-2014); CAD \$1,200,000 (2014-2017)

PIMS Collaborative Research Grant in L-Functions and Number Theory Co-PI, CAD \$200,000 (2010-2013)

Natural Sciences and Engineering Research Council (NSERC) Research Tools and Instruments Grant CAD \$23,630 (2010-2011)

University of Alberta China Institute Special Faculty Initiative CAD \$5,000 (2010-2012)

GRANTS FOR EDUCATIONAL INITIATIVES

(NSERC) PromoScience Award: CAD \$117,200 from the Natural Sciences and Engineering Research Council (NSERC) to support the Critical Transitions for Inclusive Mathematics Enrichment program from 2021 to 2024.

Teaching and Learning Enhancement Fund: CAD \$136,606 (2013-2016) to enhance mathematics education through innovative teaching methods.

Alberta Summer Mathematics Institute: Secured funding over CAD \$200,000 from the Government of Alberta and the University of Alberta (2010-2016) to establish and sustain ASMI to support graduate students and postdoctoral fellows in program for high school students.

INDIVIDUAL RESEARCH FUNDING & AWARDS

NSERC Discovery Grant: CAD \$510,000 (2010-2028)

Bard College Distinguished Visiting Professor Research Funds: \$120,000

Institut Henri Poincaré Grant: €7,000 (2019) for math/physics international research collaboration with Pierre Vanhove

University of Maryland Visiting Campobassi Professor Research Funds: \$100,000

Mathematical Association of America Merton M. Hasse Prize: \$1,000 (2015), with Ursula Whitcher.

NSERC-Subatomic Physics, Individual Discovery Grant: CAD \$25,000 (2009-2010)

National Science Foundation (NSF) SCREMS Grant: Secured \$107,000 in collaboration with William Stein as Co-PI (2008-2011)

CONFERENCES AND SEMINARS

Mathematics and Computation in Music (MCM) Conference

Lead conference organizer for biennial meeting, Bard College, 2026

MathScape 2024: The Mathematics of Supersymmetry

Founder and lead conference organizer for the new annual MathScape events, Bard College, 2024

Harvard University, Center of Mathematical Sciences and Applications (CMSA)

Organizer, Fibration and Degeneration in Calabi-Yau Geometry Workshop, 2024 and Co-organizer, Algebraic Geometry in String Theory Seminar, 2021-present

Pacific Institute for the Mathematical Sciences (PIMS)

Co-organizer, Hodge Theory, Mirror Symmetry, and Physics of Calabi-Yau Moduli, 2023

Mainz Institute for Theoretical Physics (MITP)

Co-organizer, Spectral Theory, Algebraic Geometry, and Strings, 2023

Zoom Algebraic Geometry Seminar (ZAG)

Co-organizer for new international online research seminar during pandemic, 2020-2022

Isaac Newton Institute for Mathematical Sciences

Co-organizer: K-theory, Algebraic Cycles, and Motivic Homotopy Theory, January-June 2020

String-Math Conference, University of Alberta

Lead conference organizer for premier international conference in String Theory and Mathematics, 2014

Canadian Western Algebraic Geometry Symposium

Co-organizer and co-founder, 2017 (Alberta), 2020 (Saskatchewan), 2023 (British Columbia)

Fields Institute, Toronto

Organizer, Calabi-Yau Varieties: Arithmetic, Geometry and Physics, 2013 and Arithmetic and Geometry of K3 Surfaces and Calabi-Yau Threefolds, 2011

Tsinghua Sanya International Mathematics Forum (TSIMF)

Represented PIMS and BIRS at TSIMF Inauguration Conference in Sanya, China, 2010

PROFESSIONAL SERVICE: LEADERSHIP/ COMMITTEES

Managing Editor, Advances in Theoretical and Mathematical Physics (ATMP): 2004-present
Chief Editor, Cambridge University Press: Experimental Results, Mathematics, Statistics, & Probability journal, 2019-2023
Lead, Algebra, Geometry, and Applications (AGA) Research and Teaching Area: University of Alberta, 2017-2022
Director: Pacific Institute for the Mathematical Sciences (PIMS), University of Alberta Site, 2009-2012, 2012-2015
University of Alberta: Member, Theoretical Physics Institute, 2010-present
University of Alberta: Appointment Committee for Mathematical Physics, 2009, 2013
Canadian Mathematical Society (CMS): Research Committee, 2011-2014
University of British Columbia: Member of the Pacific Institute of Theoretical Physics, 2003-2008

TEACHING AND MENTORSHIP

POSTDOCTORAL MENTORING

Mohsen Karkheiran. Current fellow. U. Alberta
Jesse Huang. 2021-2024. U. Alberta with David Favero (currently postdoctoral fellow at University of Waterloo)
Fenglong You. 2017-2020. U. Alberta with David Favero and Vincent Bouchard (currently Lecturer at Nottingham University)
Andrey Novoseltsev. 2011-2016. U. Alberta (currently Chief Operating Officer at Sagemath)
D. Peter Overholser. 2014. U. Alberta, with Emanuel Diaconescu (currently Research Scientist at Schatz Energy Research Center)
Alan Thompson. 2011-2014. U. Alberta (currently Senior Lecturer in Algebraic Geometry at Loughborough University)
Stefan Méndez-Diez. 2010-2014. U. Alberta with Vincent Bouchard (currently Assistant Professor at Bard College)
Richard Garavuso. 2009-2012. U. Alberta (currently Assistant Professor at Kingsborough Community College)
Francois-Xavier Machu. 2009-2011. U. Alberta (currently University Lecturer and Researcher at ESIEA, Paris)
Chris Herzog. 2004-2007, U. Washington with Andreas Karch (currently Professor in Theoretical Physics at King's College, London)
Aravind Asok. 2005-2008, U. Washington (currently Professor of Mathematics at the University of Southern California)

PHD STUDENT SUPERVISION

Minako Chinen. Current PhD student, U. Alberta.
Eric Pichon-Pharabod. Current PhD student with Pierre Lairez (Université Paris-Saclay) and Pierre Vanhove.
Joseph Prebble. PhD 2024 with Alan Thompson (U. of Loughborough) "Families of K3 Surfaces Polarised by a Rank 18 Lattice" (currently System Engineer at Leonardo)
Soumya Sinha Babu. PhD 2022 with Matt Kerr (Washington U.) "Quantum Curves and Asymptotic Hodge Theory" (currently Limited Term Assistant Professor at University of Georgia)
Jordan Kostiuk. PhD 2018. U. Alberta "Geometric Variations of Local Systems" (currently Senior Lecturer at Brown University)
Andrew Harder. PhD 2016. U. Alberta "The Geometry of Landau-Ginzburg Models" (currently Assistant Professor at Lehigh University)
Andrey Novoseltsev. PhD 2011. U. Alberta "Calabi-Yau Hypersurfaces and Complete Intersections in Toric Varieties" (currently Chief Operating Officer at Sagemath)
Jacob Lewis. PhD 2010. U. Washington "Elliptic and K3 Surfaces: Normal Forms, Deformations, and Applications" (currently Mathematician at the United States National Security Administration)
Robert Miller. PhD 2010. U. Washington with William Stein "Empirical Evidence for the Birch and Swinnerton-Dyer Conjecture" (currently Software Engineer at Google)
Ursula Whitcher. PhD 2009. U. Washington "Polarized Families of K3 Surfaces" (currently Associate Editor at Mathematical Reviews)
Simon Judes. PhD 2008, with Brian Greene (Columbia University, Physics) "Topics in String Theory and Cosmology" (currently Co-Chief Investment Officer at Winton Group)
Joshua Kantor. PhD 2008. U. Washington, with Robin Graham (U. Washington) "Eleven-Dimensional Supergravity on Edge Manifolds" (currently researcher at MIT Lincoln Labs)
Matthew Ballard. PhD 2008. U. Washington "Derived Categories of Sheaves of Quasi-Projective Schemes" (currently Professor of

Mathematics at University of South Carolina)

Brandon Bates. PhD 2006. Brian Greene (Columbia University, Physics) “Studies in Quantum Geometry” (Co-Founder and Chief Data Officer at SimpleKYC)

MSC STUDENT SUPERVISION

Minako Chinen. MSc 2018. U. Alberta “A Geometric and Graphical Study of 1-Dimensional N-Extended Supersymmetry Algebras”

Jordan Kostiuk. MSc 2013. U. Alberta “Heegner Points, Hilbert’s Twelfth Problem, and the Birch and Swinnerton-Dyer Conjecture”

Jason Wilkes. MSc 2011. U. Alberta with Eric Woolgar “Numerical Simulation of Ricci Flow on a Class of Manifolds with Non-Essential Minimal Surfaces”

UNDERGRADUATE STUDENT ADVISING

Hannah Park-Kaufmann. Bard College “Control Theory and Robot Arm Models for Pianist Movement” (Currently MSc student in Computational and Mathematical Engineering, Knight-Hennessy Scholar, Stanford U. and PhD in Applied Mathematics, Harvard U.)

Santanu Antu. Bard College, with Hal Haggard (Bard College) “Tetrahedral Moduli and Elliptic Curves” (Current MSc student at Perimeter Institute for Theoretical Physics and PhD student, Physics, Yale U.)

Caden Kundlas. U. Alberta “Solving the Recognition Problem for K-equations” (Current MSc student, U. Alberta)

Nathaniel Bartolome, Breanna Fang, and Amrit Klair. U. Alberta “The Mathematics of Supersymmetry”

James Iverson. U. Alberta “From Adinkras to Dessins: Supersymmetric Surface Codes”

Ethan Ross. U. Alberta “Algebraic Geometric and Topological Codes from Supersymmetry”

Jordan Kostiuk. U. Alberta “Elliptic Curves and the Birch and Swinnerton-Dyer Conjecture” (PhD, U. Alberta 2018)

Yuri (Delanghe) Sulyma. U. Alberta “Computational Toric Geometry” and “Intersection Cohomology and Newton-Okounkov Bodies” (PhD, U. Texas at Austin, 2019)

Josh Shadlen. U. Washington “Hodge Theory of Calabi-Yau Hypersurfaces” (PhD, Northwestern U., 2015)

Jacob Lewis. Columbia University “Geodesics Using Mathematica” (PhD, U. Washington, 2010)

Noah Giansiracusa. U. Washington “Cubic Surfaces and their Moduli” (PhD, Brown U., 2011)

Spencer Greenberg. Columbia University: Department of Applied Mathematics “Level Sets of Arbitrary Dimension Polynomials with Positive Coefficients and Real Powers” (PhD, New York University, 2016)

Christopher Miller. Columbia University, Physics “The Proof of the Positive Mass Conjecture and its Implications in General Relativity” (PhD, Columbia University, 2008)

David Kagan. Columbia University, Physics with Michael Faux “Anomaly Cancellation in K3 Orbifolds of M-Theory” (PhD, University of Cambridge, 2007)

SELECTED COURSES

Selected Short Courses (2017-2024):

Fibration, Degeneration, and Mirror Symmetry, Sep. 2024, School on Hodge Theory and Shimura Varieties, Univ. Duisberg-Essen
Calabi-Yau Fibrations and Degeneration, Aug. 2022, Bhaskaracharya Pratishthana, Pune
Trimester on Calabi-Yau 3-Folds Geometry
Moduli of K3 Surfaces, Sep. 2021, Siberian Summer School: Current Developments in Geometry
Picard-Fuchs Differential Equations, Oct.-Dec. 2020, Mathematical Sciences Research Institute, Berkeley
Calabi-Yau Manifolds, Mirrors, and Motives, January 2020, Isaac Newton Institute, Cambridge
Calabi-Yau Manifolds, Mirrors, and Moduli, October 2017, Albert-Ludwigs Universität Freiburg

Selected Graduate Courses:

Differential Equations in Algebraic Geometry, Complex Variables, Calabi-Yau Geometry, Computation in Mathematics: Research via Experimentation, Geometry and Modular Forms, Differentiable Manifolds, Curves and Bundles, Calabi-Yau Manifolds, Elliptic Curves and Elliptic Fibrations, Mirror Symmetry, Exceptional Structures in Mathematics, Hodge Theory, Automorphic Forms in Geometry and Physics, Deformation Theories for Geometry and Number Theory

Selected Undergraduate Courses:

Mathematics for the Public Good, Mathematical Methods of Physics, Introduction to Partial Differential Equations, Theory of Functions of a Complex Variable, Geometry, Coding Theory, Differential Equations, Calculus with Analytical Geometry, Introductory Calculus, Fourier Analysis, Differential Geometry, Introduction to Analysis, Linear Algebra, Vector Calculus, Algebraic Curves

PUBLICATIONS

Publications on arXiv:

- i. **Towards the Doran-Harder-Thompson Conjecture via the Gross-Siebert Program**
Lawrence J. Barrott, Charles Doran, arXiv:2105.02617v1 [math.AG] 6 May 2021: 31 pages
- ii. **Degenerations, Fibrations, and Higher Rank Landau-Ginzburg Models**
Charles Doran, Jordan Kostiuk, and Fenglong You, arXiv:2112.12891v1 [math.AG] 24 Dec 2021: 41 pages
- iii. **The Mirror Clemens-Schmid Sequence**
Charles Doran and Alan Thompson, arXiv:2109.04849v2 [math.AG] 13 May 2022: 28 pages
- iv. **Modularity of Landau-Ginzburg Models**
Charles Doran, Andrew Harder, Ludmil Katzarkov, Mikhail Ovcharenko, Victor Przyjalkowski, arXiv:2307.15607 [math.AG] 28 Jul 2023: 252 pages
- v. **Normal Forms and Tyurin Degenerations of K3 Surfaces Polarized by a Rank 18 Lattice**
Charles Doran, Joseph Prebble, Alan Thompson, arXiv:2311.10394 [math.AG] 17 Nov 2023: 24 pages

Refereed Publications:

1. The Motivic Geometry of Two-Loop Feynman Integrals
Charles Doran, Andrew Harder, Pierre Vanhove (with an appendix by Eric Pichon-Pharabod), to appear in The Quarterly Journal of Mathematics, Oxford University Press: 67 pages
2. K2 and Quantum Curves
Charles Doran, Matt Kerr, Soumya Sinha Babu. To appear in Advances in Theoretical and Mathematical Physics (2023): 51 pages
3. Geometric Variations of Local Systems and Elliptic Surfaces
Charles Doran and Jordan Kostiuk. Israel Journal of Mathematics (2023): 79 pages
4. The Doran-Harder-Thompson Conjecture for Toric Complete Intersections
Charles Doran, Jordan Kostiuk, Fenglong You. Advances in Mathematics, Volume 415 (2023), 108893 : 47 pages
5. Unwinding Toric Degenerations and Mirror Symmetry for Grassmannians
Tom Coates, Charles Doran, Alana Kalashnikov. Forum of Mathematics, Sigma, Volume 10 (2022), e111: 33 pages
6. Hypergeometric Decomposition of Symmetric K3 Quartic Pencils
Charles Doran, Tyler Kelly, Adriana Salerno, Steven Sperber, John Voight, Ursula Whitcher. Research in the Mathematical Sciences 7, Article number: 7 (2020): 81 pages
7. Calabi-Yau Threefolds Fibred by High Rank Lattice Polarized K3 Surfaces
Charles Doran, Andrew Harder, Andrey Novoseltsev, Alan Thompson. Mathematische Zeitschrift (2020) 294: 783-815
8. Calabi-Yau Manifolds Realizing Symplectically Rigid Monodromy Tuples.
Charles Doran and Andreas Malmendier. Advances in Theoretical and Mathematical Physics, Volume 23 (2019) Issue 5, 1271-1359
9. Specialization of Cycles and the K-Theory Elevator
Pedro Luis del Angel, Charles Doran, Matt Kerr, James Lewis, Jaya Iyer, Stefan Müller-Stach, Deepam Patel Communications in Number Theory and Physics, Volume 13 (2019) Number 2, 299-349

10. Mirror Symmetry for Lattice Polarized Del Pezzo Surfaces
Charles Doran, Alan Thompson. *Communications in Number Theory and Physics*, Volume 12, Number 3 (2018), 543-580
11. Zeta Functions of Alternate Mirror Calabi-Yau Families
Charles Doran, Tyler Kelly, Adriana Salerno, Steven Sperber, John Voight, Ursula Whitcher. *Israel Journal of Mathematics*, October 2018, Volume 228, Issue 2, 665-705
12. Geometrization of N-Extended 1-Dimensional Supersymmetry Algebras, II
Charles Doran, Kevin Iga, Jordan Kostiuik, Stefan Méndez-Diez. *Advances in Theoretical and Mathematical Physics*, Volume 22, Issue 3 (2018).
13. Equivalences of Families of Stacky Toric Calabi-Yau Hypersurfaces.
Charles Doran, David Favero, Tyler Kelly. *Proceedings of the American Mathematical Society*, 146 (2018), 4633-4647
14. Picard-Fuchs Uniformization of Modular Subvarieties
Brent Doran, Charles Doran, Andrew Harder; 2018; In *Uniformization, Riemann-Hilbert Correspondence, Calabi- Yau Manifolds, and Picard-Fuchs Equations*. Eds. Lizhen Ji and Shing-Tung Yau. International Press/Higher Education Press. *Advanced Lectures in Mathematics*, Volume 42, 21-54
15. Innovative CAS Technology Use in University Mathematics Teaching and Assessment: Findings from a Case Study in Alberta, Canada
Daniel Jarvis, Chantal Buteau, Charles Doran, Andrey Novoseltsev; 2018; *Journal of Computers in Mathematics and Science Teaching*, 37(4). 34 pages
16. Hodge Numbers from Picard-Fuchs Equations
Charles Doran, Andrew Harder, Alan Thompson; 2017; *SIGMA* 13 (2017), 045, 23 pages
17. Off-shell Supersymmetry and Filtered Clifford Supermodules
Charles Doran, Michael Faux, Jim Gates, Tristan Hübsch, Kevin Iga, Greg Landweber; 2017; *Algebras and Representation Theory*, DOI: 10.1007/s10468-017-9718-8, July 2017
18. Vertical D4-D2-D0 Bound States on K3 Fibrations and Modularity
Vincent Bouchard, Thomas Creutzig, Dănuț Emanuel Diaconescu, Charles Doran, Callum Quigley; 2017; *Communications in Mathematical Physics* 350, 1069-1121 (2017)
19. Mirror Symmetry, Tyurin Degenerations, and Fibrations on Calabi-Yau Manifolds
Charles Doran, Andrew Harder, Alan Thompson; 2018; In *String-Math 2015*, American Mathematical Society, *Proceedings of Symposia in Pure Mathematics*, 96, 93-132
20. Special Function Identities from Superelliptic Kummer Varieties
Adrian Clingher, Charles Doran, Andreas Malmendier; 2017; *Asian Journal of Mathematics*, Volume 21 (2017) Number 5, 909-952
21. An Application of Cubical Cohomology to Adinkras and Supersymmetry Representations
Charles Doran, Kevin Iga, Greg Landweber; 2017; *Annales de l'Institut Henri Poincaré D: Combinatorics, Physics and their Interactions*, Volume 4, Issue 3, 2017, 387-415
22. Calabi-Yau Threefolds Fibred by Mirror Quartic K3 Surfaces
Charles Doran, Andrew Harder, Andrey Novoseltsev, Alan Thompson; 2016; *Advances in Mathematics*, Volume 298, 6 August 2016, 369-392
23. Toric Degenerations and Laurent Polynomials Related to Givental's Landau-Ginzburg Models
Charles Doran, Andrew Harder; 2016; *Canadian Journal of Mathematics*, Volume 68 (2016), 784-815
24. Calabi-Yau Threefolds Fibred by Kummer Surfaces Associated to Products of Elliptic Curves

- Charles Doran, Andrew Harder, Andrey Novoseltsev, Alan Thompson; 2016; In String-Math 2014, American Mathematical Society, Proceedings of Symposia in Pure Mathematics 93, 278-303
25. Humbert Surfaces and the Moduli of Lattice Polarized K3 Surfaces
Charles Doran, Andrew Harder, Hossein Movasati, Ursula Whitcher; 2016; In String-Math 2014, American Mathematical Society, Proceedings of Symposia in Pure Mathematics 93, 124-155
26. The 14th Case VHS via K3 Fibrations
Adrian Clingher, Charles Doran, Jacob Lewis, Andrey Novoseltsev, Alan Thompson; 2016; In Recent Advances in Hodge Theory: Period Domains, Algebraic Cycles, and Arithmetic, Cambridge University Press, London Mathematical Society Lecture Note Series 427, 165-227
27. Geometrization of N-Extended 1-Dimensional Supersymmetry Algebras, I
Charles Doran, Kevin Iga, Jordan Kostiuk, Greg Landweber, Stefan Méndez-Diez; 2015; Advances in Theoretical and Mathematical Physics, Volume 19 (2015) Number 5, pp 1043-1113
28. Families of Lattice Polarized K3 Surfaces with Monodromy
Charles Doran, Andrew Harder, Andrey Novoseltsev, Alan Thompson; 2015; International Mathematics Research Notices, 2015 (23): 12265-12318
29. String Theory on Elliptic Curve Orientifolds and KR-Theory
Charles Doran, Stefan Méndez-Diez, Jonathan Rosenberg; 2014; Communications in Mathematical Physics, April 2015, Volume 335, Issue 2, pp. 955-1001
30. Algebraic Cycles and Local Quantum Cohomology
Charles Doran, Matt Kerr; 2014; Communications in Number Theory and Physics, Volume 8 (2014), Number 4, pp. 703-727
31. Normal Functions, Picard-Fuchs Equations, and Elliptic Fibrations on K3 Surfaces
Xi Chen, Charles Doran, Matt Kerr, James Lewis ; 2014 ; Journal für die reine und angewandte Mathematik (Crelle's Journal), DOI: 10.1515/crelle-2014-0085, November 2014
32. T-Duality for Orientifolds and Twisted KR-Theory
Charles Doran, Stefan Méndez-Diez, Jonathan Rosenberg; 2014; Letters in Mathematical Physics; November 2014, Volume 104, Issue 11, pp. 1333-1364
33. Short Tops and Semistable Degenerations
Ryan Davis, Charles Doran, Adam Gewiss, Andrey Novoseltsev, Dmitri Skjorshammer, Alexa Syryczuk, Ursula Whitcher; 2014; Experimental Mathematics, Volume 23, Issue 4, 2014, pp. 351-362
34. On General Off-Shell Representations of Worldline (1D) Supersymmetry
Charles Doran, Tristan Hübsch, Kevin Iga, Gregory Landweber; 2014; Symmetry, 2014, 6(1), pp. 67-88
35. Automorphic Forms for Triangle Groups
Charles Doran, Terry Gannon, Hossein Movasati, Khosro Shokri; 2013; Communications in Number Theory and Physics, Volume 7 (2013), Number 4, pp. 689-737
36. From Polygons to String Theory
Charles Doran, Ursula Whitcher; 2012; Mathematics Magazine, Vol 85, Number 5, December 2012, 343-360
37. Lattice Polarized K3 Surfaces and Siegel Modular Forms
Adrian Clingher, Charles Doran; 2012; Advances in Mathematics, Volume 231, Issue 1, 172–212
38. Codes and Supersymmetry in One Dimension
Charles Doran, Michael Faux, Jim Gates, Tristan Hübsch, Kevin Iga, Greg Landweber, Robert Miller; 2011; Advances in Theoretical and Mathematical Physics, Volume 15, Number 6 (2011), 1909-1970

39. Hori-Vafa Mirror Periods, Picard-Fuchs Equations, and Berglund-Hübsch-Krawitz Duality
Charles Doran, Richard Garavuso; 2011; Journal of High Energy Physics, October 2011, 2011:128
40. Algebraic K-Theory of Toric Hypersurfaces
Charles Doran, Matthew Kerr; 2011; Commun. Number Theory Phys, Vol 5, No 2, pp. 397-600
41. Note on a Geometric Isogeny of K3 Surfaces
Adrian Clingher, Charles Doran; 2011; International Mathematics Research Notices, 2011 (16): 3657-3687
42. Closed Form Expressions for Hodge Numbers of Complete Intersection Calabi-Yau Threefolds in Toric Varieties Charles Doran, Andrey Novoseltsev; 2010; In Mirror Symmetry and Tropical Geometry, Contemporary Mathematics, Vol 527, pp. 1-14
43. A Superfield for Every Dash-Chromotopology
Charles Doran, Michael Faux, Jim Gates, Tristan Hübsch, Kevin Iga, Greg Landweber; 2009; International Journal of Modern Physics A, Vol 24, Issue 30, pp. 5681-5695
44. Frames for Supersymmetry
Charles Doran, Michael Faux, Jim Gates, Tristan Hübsch, Kevin Iga, Greg Landweber; 2009; International Journal of Modern Physics A, Vol 24, Issue 14 (2009) pp. 2665-2676
45. Normal Forms, K3 Surface Moduli, and Modular Parametrizations
Adrian Clingher, Charles Doran, Jacob Lewis, Ursula Whitcher; 2009; In Groups and Symmetries, CRM Proceedings and Lecture Notes, 47, 81-98
46. Super-Zeeman Embedding Models on N-Supersymmetric World-Lines
Charles Doran, Michael Faux, Jim Gates, Tristan Hübsch, Kevin Iga, Greg Landweber; 2009; Journal of Physics A: Mathematical and Theoretical, Vol 42. 065402
47. On the Matter of $N = 2$ Matter
Charles Doran, Michael Faux, Jim Gates, Tristan Hübsch, Kevin Iga, Greg Landweber; 2008; Physics Letters B, Volume 659, Issues 1-2, 17, Pages 441-446
48. Numerical Kähler-Einstein Metric on the Third del Pezzo
Charles Doran, Matthew Headrick, Christopher Herzog, Joshua Kantor, Toby Wiseman; 2008; Communications in Mathematical Physics, Volume 282, Number 2, 357-393
49. Families of Quintic Calabi-Yau 3-Folds with Discrete Symmetries
Charles Doran, Brian Greene, Simon Judes; 2008; Communications in Mathematical Physics, Volume 280, Number 2, 675-725
50. Counterexamples to a Putative Classification of 1-Dimensional, N-extended Supermultiplets
Charles Doran, Michael Faux, Jim Gates, Tristan Hübsch, Kevin Iga, Greg Landweber; 2007; Advanced Studies in Theoretical Physics, Vol 2, no 3, 99 – 111
51. Adinkras and the Dynamics of Superspace Prepotentials
Charles Doran, Michael Faux, Jim Gates, Tristan Hübsch, Kevin Iga, Greg Landweber; 2008; Advanced Studies in Theoretical Physics, Vol 2, no 3, 113 – 164
52. On Stokes Matrices of Calabi-Yau Hypersurfaces
Charles Doran, Shinobu Hosono; 2007; Advances in Theoretical and Mathematical Physics, Volume 11, Issue 1, 147-174
53. Algebraic Topology of Calabi-Yau Threefolds in Toric Varieties
Charles Doran, John Morgan; 2007; Geometry and Topology, 11, 597-642

54. Crosscaps in Gepner Models and the Moduli Space of T2 Orientifolds
Brandon Bates, Charles Doran, Koenraad Schalm; 2007; *Advances in Theoretical and Mathematical Physics*, Volume 11, Issue 5, 839-912
55. Modular Invariants for Lattice Polarized K3 Surfaces
Adrian Clingher, Charles Doran; 2007; *Michigan Mathematical Journal*, 55, Issue 2, 355-393
56. On Graph-Theoretic Identifications of Adinkras, Supersymmetry Representations and Superfields
Charles Doran, Michael Faux, Jim Gates, Tristan Hübsch, Kevin Iga, Greg Landweber; 2007; *International Journal of Modern Physics A*, Vol 22, No 5, 869-930
57. On K3 Surfaces with Large Complex Structure
Adrian Clingher, Charles Doran; 2007; *Advances in Mathematics*, 215, 504-539
58. Mirror Symmetry and Integral Variations of Hodge Structure Underlying One Parameter Families of Calabi-Yau Threefolds
Charles Doran, John Morgan; 2006; In *Mirror Symmetry V*, AMS/IP Studies in Advanced Mathematics, 38, 517-537
59. A “Periodic Table” for Supersymmetric M-Theory Compactifications
Charles Doran, Michael Faux; 2003; *Journal of Mathematical Physics*, 44, 2853-2873
60. Four-Dimensional $N = 1$ Super Yang-Mills Theory from an M-Theory Orbifold
Charles Doran, Michael Faux, Burt Ovrut; 2002; *Advances in Theoretical and Math Phys*, 6, 329-355
61. Intersecting Branes in M-Theory and Chiral Matter in Four Dimensions
Charles Doran, Michael Faux; 2002; *Journal of High Energy Physics*, JHEP08, 024
62. Algebraic and Geometric Isomonodromic Deformations
Charles Doran; 2001; *Journal of Differential Geometry*, 59, 33-85
63. Algebro-geometric Isomonodromic Deformations Linking Hauptmoduls: Variation of the Mirror Map
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