

Curriculum Vitae

Sébastien Picard

PERSONAL INFORMATION

Address 1984 Mathematics Road, Vancouver BC Canada, V6T 1Z2
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EMPLOYMENT

2020–present Assistant Professor, University of British Columbia
2018–2020 Benjamin Peirce Fellow, Harvard University

EDUCATION

2013–2018 Ph.D. in Mathematics, Columbia University
2011–2013 M.Sc. in Mathematics, McGill University
2006–2011 B.Sc. in Physics and Mathematics, University of Victoria

PUBLICATIONS

1. B. Friedman, S. Picard and C. Suan
Gromov-Hausdorff continuity of non-Kähler Calabi-Yau conifold transitions
preprint, arXiv:2404.11840.
2. J. McOrist, S. Picard and E.E. Svanes
A heterotic Hermitian-Yang-Mills equivalence
preprint, arXiv:2402.10354.
3. S. Picard
The Strominger system and flows by the Ricci tensor
to appear in Surv. Differ. Geom.
4. S. Picard and P.-L. Wu
Balanced and Aeppli parameters for the heterotic moduli
to appear in Internat. J. Math.
5. T.C. Collins, S. Picard and S.-T. Yau
The Strominger system in the square of a Kähler class
to appear in Pure Appl. Math. Q.

6. S. Picard and C. Suan
Flows of G_2 -structures associated to Calabi-Yau manifolds
to appear in Math. Res. Lett.
7. T. Fei, D.H. Phong, S. Picard and X.-W. Zhang
Stability of the Type IIA flow and its applications in symplectic geometry
to appear in Communications in Analysis and Geometry.
8. T.C. Collins, S. Picard and S.-T. Yau
Stability of the tangent bundle through conifold transitions
Comm. Pure Appl. Math. 77, 284-371 (2024).
9. T.C. Collins, S. Gukov, S. Picard and S.-T. Yau
Special Lagrangian cycles and Calabi-Yau transitions
Commun. Math. Phys. 401, 769–802 (2023).
10. T. Fei, D.H. Phong, S. Picard and X.-W. Zhang
Bochner-Kodaira formulas and the Type IIA flow
J. Geom. Anal. 33, 48 (2023).
11. T.C. Collins and S. Picard
The Dirichlet problem for the k -Hessian equation on a complex manifold
American Journal of Mathematics 144, no. 6 (2022), 1641-1680.
12. T. Fei, D.H. Phong, S. Picard and X.-W. Zhang
Estimates for a geometric flow for the Type IIB string
Math. Ann. 382 (2022), 1935-1955.
13. T. Fei, D.H. Phong, S. Picard and X.-W. Zhang
Geometric flows for the Type IIA string
Cambridge Journal of Mathematics, Vol. 9, No. 3 (2021), 683-807.
14. T. Fei and S. Picard
Anomaly flow and T-duality
Pure and Applied Mathematics Quarterly, Vol. 17, No. 3 (2021), 1083-1112.
15. D.H. Phong, S. Picard, and X.-W. Zhang
Fu-Yau Hessian equations
J. Differential Geom. 118 (2021), No. 1, 147-187.
16. T. Fei, S. Picard and Z. Huang
The Anomaly flow over Riemann surfaces
I.M.R.N. 2021, no. 3 (2021), 2134-2165.
17. T. Fei, S. Picard and Z. Huang
A construction of infinitely many solutions to the Strominger system
J. Differential Geom. 117 (2021), No. 1, 23-39.
18. D.H. Phong, S. Picard, and X.-W. Zhang
A flow of conformally balanced metrics with Kähler fixed points
Math. Ann. 374, no. 3-4 (2019), 2005-2040.
19. D.H. Phong, S. Picard, and X.-W. Zhang
The Anomaly flow on unimodular Lie groups
Contemp. Math. (2019), Vol. 735, Advances in Complex Geometry.
20. D.H. Phong, S. Picard, and X.-W. Zhang
On estimates for the Fu-Yau generalization of a Strominger system
J. Reine Angew. Math (2019), No. 751, 243-274.
21. D.H. Phong, S. Picard, and X.-W. Zhang
Anomaly flows
Comm. Anal. Geom. 26 (2018) No. 4, 955-1008.

22. D.H. Phong, S. Picard, and X.-W. Zhang
The Anomaly flow and the Fu-Yau equation
Annals of PDE 4 (2018), No. 2.
23. D.H. Phong, S. Picard, and X.-W. Zhang
Geometric flows and Strominger systems
Math. Z. 288 (2018), 101-113.
24. D.H. Phong, S. Picard, and X.-W. Zhang
New curvature flows in complex geometry
Surveys in Differential Geometry 22 (2017), No. 1, 331-364.
25. T.C. Collins, S. Picard and X. Wu
Concavity of the Lagrangian phase operator and applications
Calc. Var. 56, 89 (2017).
26. D.H. Phong, S. Picard, and X.-W. Zhang
The Fu-Yau equation with negative slope parameter
Inventiones mathematicae 209 (2017), No. 2, 541-576.
27. D.H. Phong, S. Picard, and X.-W. Zhang
A second order estimate for general complex Hessian equations
Analysis and PDE 9 (2016), No. 7, 1693-1709.
28. S. Picard
A priori estimates of the degenerate Monge-Ampère equation on Kähler manifolds of non-negative bisectional curvature
Math. Res. Lett. 20 (2013), No 6, 1145-1156.

INVITED TALKS

- University of Adelaide Differential Geometry Seminar (September 2024)
- University of Queensland Differential Geometry Seminar (August 2024)
- Workshop on Geometry Crossing Singularities at National Taiwan University (July 2024)
- Workshop on PDEs in Complex Geometry at CRM Montreal (April 2024)
- McGill Geometric Analysis Seminar (April 2024)
- CMS Winter Meeting 2023 in Montreal (December 2023)
- Workshop on Geometric Flows and Applications at ICMS Edinburgh (July 2023)
- Australia New Zealand Geometry Strings Field seminar (April 2023)
- Simons Center Workshop on Supergravity, Generalized Geometry and Ricci Flow (April 2023)
- University of Toronto Geometry and Topology Seminar (March 2023)
- UBC Undergraduate Mathematics Society Invited Lecture (March 2023)
- Columbia University Complex Geometry Seminar (February 2023)
- Stavanger University Geometry and Physics Seminar (January 2023)
- Canadian Geometry and Topology Seminar at UQAM (November 2022)
- Pacific Northwest Geometry Seminar at Seattle U (November 2022)
- Rutgers Newark Department Colloquium (November 2022)
- Generalized Geometry in Interaction Workshop at ICMAT Madrid (June 2022)
- Geometry and Tacos Online Conference (May 2022)
- Deformation of Geometric Structures in Current Mathematics: A Celebration of the Works of Masatake Kuranishi at Harvard (May 2022)
- Virginia Tech String Theory Group Meeting (March 2022)
- Iowa State Geometric Analysis Seminar (March 2022)
- CUHK Geometric Analysis Seminar (October 2021)

- Columbia Complex Geometry and PDE Seminar (September 2021)
- Geometric Analysis Session at CMS Meeting Ottawa (June 2021)
- McGill Geometry Analysis Seminar (March 2021)
- Differential Geometry Seminar Torino (March 2021)
- KIAS Geometry and Analysis Seminar (December 2020)
- ICMAT Madrid Geometry Seminar (December 2020)
- UC Irvine Differential Geometry Seminar (December 2020)
- McMaster Geometry and Topology Seminar (November 2020)
- McGill Geometric Analysis Seminar (May 2020)
- Brandeis Everytopic Seminar (March 2020)
- UIC Geometry, Topology and Dynamics seminar (February 2020)
- University of Washington Colloquium (January 2020)
- University of British Columbia Differential Geometry Seminar (December 2019)
- University of British Columbia Colloquium (December 2019)
- AdIMOM Conference in Toronto (April 2019)
- Snapshots of Math at Harvard (February 2019)
- Harvard Differential Geometry Seminar (October 2018)
- Boston University Geometry and Physics Seminar (April 2018)
- AMS Sectional Meeting at Ohio State (March 2018)
- U Waterloo Geometry and Topology Seminar (February 2018)
- Fields Geometric Analysis Colloquium (February 2018)
- AMS Sectional Meeting at UC Riverside (November 2017)
- Conference on New Directions in Kähler Geometry at Notre Dame (June 2017)
- UC Irvine Differential Geometry Seminar (May 2017)
- Ohio State PDE Seminar (January 2017)
- Harvard Differential Geometry Seminar (November 2016)
- Syracuse Analysis Seminar (October 2016)
- Northwestern Analysis Seminar (May 2016)

MINICOURSES AND LECTURE SERIES

- Summer school at TIMS (Taiwan, July 2024). Lecture series on the Strominger system
- Summer school at CIME (Italy, July 2018). Lecture series on complex non-Kähler geometry

VISITING POSITIONS

- MATRIX-Simons Young Scholar Award, MATRIX Institute Melbourne, September 2024
- CRM-Simons Scholarship, CRM Montreal, April 2024

MENTORING

- **PhD Students:** Caleb Suan (2021–present), Benjamin Friedman (with A. Fraser, 2022–present), Peilin Wu (2024–present), Roomina Zand (with A. Chau, 2023–present)
- **MSc Students:** Yucong Sun (2021–2023), Peilin Wu (2023–2024)
- **Postdoctoral mentoring:** Federico Trinca (2024–present)
- **Undergraduate summer research:** Anna Kis (2022), Dean Ciarniello (2024)

TEACHING

At UBC:

2024–2025	Differential Topology, Differential Geometry I, Calculus III
2023–2024	Vector Calculus, Calculus III
2022–2023	Vector Calculus, Differential Geometry II, Topics in Complex Geometry
2021–2022	Vector Calculus, Differential Geometry II
2020–2021	Calculus I, Vector Calculus

At Harvard:

2019–2020	Curves and Surfaces, Differential Geometry I, Topics in Geometry
2018–2019	Linear Algebra, Curves and Surfaces, Topics in Geometry

At Columbia:

2016–2017:	Calculus I
2015–2016:	Calculus III

GRANTS

2021–2026	NSERC Discovery Grant
2021	NSERC Accelerator Supplement

SERVICE

- Member of FRQNT (Quebec) project evaluation committee, 2023-2024
- Member of NSERC (Canada) Committee 177 - Scholarships and Fellowships Selection Committee for Mathematical Sciences, 2019-2022
- Referee for: *Analysis and PDE* (2022), *Annales Scientifiques de l'École Normale Supérieure* (2019, 2022), *Annali della Scuola Normale Superiore di Pisa* (2017), *Canadian Journal of Mathematics* (2022), *Communications in Mathematical Physics* (2024), *Communications in Analysis and Geometry* (2021, 2023), *Compositio Mathematica* (2021), *CUBO Mathematical Journal* (2020), *Geometry and Topology* (2019), *International Journal of Mathematics* (2023), *International Mathematics Research Notices* (2018, 2022), *Inventiones Mathematicae* (2024), *Journal of Differential Geometry* (2019, 2020, 2021, 2022), *Journal of the European Mathematical Society* (2021), *Journal of Geometric Analysis* (2022), *Journal of the London Mathematical Society* (2018), *Journal of Functional Analysis* (2023), *Journal für die reine und angewandte Mathematik* (2019), *Nonlinear Analysis* (2020), *Pure and Applied Mathematics Quarterly* (2019), *Proceedings of the AMS* (2022, 2024), *Proceedings of the London Mathematical Society* (2021), *Transactions of the AMS* (2021), *Mathematical Research Letters* (2019, 2023), *Mathematische Zeitschrift* (2022, 2024).

EVENT ORGANIZATION

- Organizer, UBC Differential Geometry, Mathematical Physics and PDE Seminar 2021-present
- Co-organizer, Pacific Northwest Geometry Seminar in Vancouver 2025
- Co-organizer, program on “The Geometry of Moduli Spaces in String Theory” at MATRIX in Melbourne 2024

- Co-organizer, CRM workshop on “Special Riemannian Geometries in Dimensions 6,7,8” in Montreal 2024
- Co-organizer, special session on “Recent developments in complex geometry and geometric analysis” at CMS 2021 Winter Meeting
- Co-organizer, Geometry and TACoS (Online Conference Series), 2020-2021
- Co-organizer, Harvard Differential Geometry Seminar, 2018-2020
- Co-organizer, Brandeis-Harvard-MIT-Northeastern Joint Mathematics Colloquium, 2018-2020
- Co-organizer, Harvard Open Neighborhood Seminar, 2019-2020
- Co-organizer, Informal Complex Geometry and PDE Seminar at Columbia University 2015-2018