

# 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. *The decoupling of moduli about the standard embedding*  
B. Chisamanga, J. McOrist, S. Picard and E.E. Svanes  
preprint, arXiv:2409.04350.
2. *Gromov-Hausdorff continuity of non-Kähler Calabi-Yau conifold transitions*  
B. Friedman, S. Picard and C. Suan  
preprint, arXiv:2404.11840.
3. *A heterotic Hermitian-Yang-Mills equivalence*  
J. McOrist, S. Picard and E.E. Svanes  
preprint, arXiv:2402.10354.
4. *The Strominger system and flows by the Ricci tensor*  
S. Picard  
to appear in **Surveys in Differential Geometry**
5. *Balanced and Aeppli parameters for the heterotic moduli*  
S. Picard and P.-L. Wu  
to appear in **Internat. J. Math.**

6. *The Strominger system in the square of a Kahler class*  
T.C. Collins, S. Picard and S.-T. Yau  
to appear in **Pure Appl. Math. Q.**
7. *Flows of  $G_2$ -structures associated to Calabi-Yau manifolds*  
S. Picard and C. Suan  
to appear in **Math. Res. Lett.**
8. *Stability of the Type IIA flow and its applications in symplectic geometry*  
T. Fei, D.H. Phong, S. Picard and X.-W. Zhang  
to appear in **Communications in Analysis and Geometry**
9. *Stability of the tangent bundle through conifold transitions*  
T.C. Collins, S. Picard and S.-T. Yau  
**Comm. Pure Appl. Math.** 77, 284-371 (2024).
10. *Special Lagrangian cycles and Calabi-Yau transitions*  
T.C. Collins, S. Gukov, S. Picard and S.-T. Yau  
**Commun. Math. Phys.** 401, 769-802 (2023).
11. *Bochner-Kodaira formulas and the Type IIA flow*  
T. Fei, D.H. Phong, S. Picard and X.-W. Zhang  
**J. Geom. Anal.** 33, 48 (2023).
12. *The Dirichlet problem for the  $k$ -Hessian equation on a complex manifold*  
T.C. Collins and S. Picard  
**American Journal of Mathematics** 144, no. 6 (2022), 1641-1680.
13. *Estimates for a geometric flow for the Type IIB string*  
T. Fei, D.H. Phong, S. Picard and X.-W. Zhang  
**Math. Ann.** 382 (2022), 1935-1955.
14. *Geometric flows for the Type IIA string*  
T. Fei, D.H. Phong, S. Picard and X.-W. Zhang  
**Cambridge Journal of Mathematics**, Vol. 9, No. 3 (2021), 683-807.
15. *Anomaly flow and T-duality*  
T. Fei and S. Picard  
**Pure and Applied Mathematics Quarterly**, Vol. 17, No. 3 (2021), 1083-1112.
16. *Fu-Yau Hessian equations*  
D.H. Phong, S. Picard, and X.-W. Zhang  
**J. Differential Geom.** 118 (2021), No. 1, 147-187.
17. *The Anomaly flow over Riemann surfaces*  
T. Fei, S. Picard and Z. Huang  
**Int. Math. Res. Not.** 2021, no. 3 (2021), 2134-2165.
18. *A construction of infinitely many solutions to the Strominger system*  
T. Fei, S. Picard and Z. Huang  
**J. Differential Geom.** 117 (2021), No. 1, 23-39.
19. *A flow of conformally balanced metrics with Kähler fixed points*  
D.H. Phong, S. Picard, and X.-W. Zhang  
**Math. Ann.** 374, no. 3-4 (2019), 2005-2040.
20. *The Anomaly flow on unimodular Lie groups*  
D.H. Phong, S. Picard, and X.-W. Zhang  
**Contemp. Math.** (2019), Vol. 735, Advances in Complex Geometry.
21. *On estimates for the Fu-Yau generalization of a Strominger system*  
D.H. Phong, S. Picard, and X.-W. Zhang  
**J. Reine Angew. Math** (2019), No. 751, 243-274.

22. *Anomaly flows*  
D.H. Phong, S. Picard, and X.-W. Zhang  
**Comm. Anal. Geom.** 26 (2018) No. 4, 955-1008.
23. *The Anomaly flow and the Fu-Yau equation*  
D.H. Phong, S. Picard, and X.-W. Zhang  
**Annals of PDE** 4 (2018), No. 2.
24. *Geometric flows and Strominger systems*  
D.H. Phong, S. Picard, and X.-W. Zhang  
**Math. Z.** 288 (2018), 101-113.
25. *New curvature flows in complex geometry*  
D.H. Phong, S. Picard, and X.-W. Zhang  
**Surveys in Differential Geometry** 22 (2017), No. 1, 331-364.
26. *Concavity of the Lagrangian phase operator and applications*  
T.C. Collins, S. Picard and X. Wu  
**Calc. Var. Partial Differ. Equ.** 56, 89 (2017).
27. *The Fu-Yau equation with negative slope parameter*  
D.H. Phong, S. Picard, and X.-W. Zhang  
**Inventiones Mathematicae** 209 (2017), No. 2, 541-576.
28. *A second order estimate for general complex Hessian equations*  
D.H. Phong, S. Picard, and X.-W. Zhang  
**Analysis and PDE** 9 (2016), No. 7, 1693-1709.
29. *A priori estimates of the degenerate Monge-Ampère equation on Kähler manifolds of non-negative bisectional curvature*  
S. Picard  
**Math. Res. Lett.** 20 (2013), No 6, 1145-1156.

#### INVITED TALKS

- Columbia University Complex Geometry Seminar (September 2024)
- Tsinghua University Differential Geometry Seminar (September 2024)
- University of Adelaide Differential Geometry Seminar (September 2024)
- University of New England Differential Geometry Seminar (August 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 non-Kähler geometry

#### AWARDS

- ICCM 2024 Best Paper Award for paper [9]
- 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

## 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