Kyle Broder – Curriculum Vitae

Employment.

- The University of Queensland, postdoctoral research fellow. September 2022–Present.

Education.

- The Australian National University, Doctor of Philosophy (Mathematics). January 2019–August 2022, graduated July 13, 2023. Thesis: Complex manifolds of hyperbolic and non-hyperbolic-type. Advisors: Benjamin Andrews (Australian National University) and Gang Tian (Princeton University, Peking University).

- The Australian National University, Bachelor of Science (First Class Honours). 2015–2018. Undergraduate thesis: Theory of Stein spaces. Advisor: Alexander Isaev.

Successful fellowships and awards.

- Marie Sklodowska-Curie Fellowship. Proposal: Curvature aspects of rigidity and flexibility of complex manifolds. 155559.36 EUR.

- International Research Lab France-Australia Mathematical Sciences and Interactions (IRL FAMS). 4000 EUR.

- Raybould visiting fellowship. 8000 AUD.

Articles and Preprints.

- (with D. Popovici). Holomorphic p-Contact and s-Symplectic Line Bundles. arXiv:2511.23139 *To appear in J. Geom. Anal.*

- (with G. Tian). Mortal solutions to the Kähler–Ricci flow. *To appear in the MATRIX Annals.*

- (with A. Iliashenko and J. Madnick). The Schwarz lemma and hyperbolicity in calibrated geometry. arXiv:2507.16313.

- (with J. Nienhaus, P. Petersen, J. Stanfield, M. Wink). Vanishing theorems for Hodge numbers and the Calabi curvature operator, arXiv:2503.06870.

- (with F. Campana). Weakly special manifolds with no rational curves, arXiv:2410.06402. To appear in Bull. Soc. Math. France.

- (with J. Stanfield). A General Schwarz Lemma for Hermitian Manifolds, arXiv:2309.04636. Bull. Lond. Math. Soc.

- (with A. Pulemotov). Hermitian metrics with vanishing second Chern Ricci curvature, *Bulletin of the London Mathematical Society*, (2024). arXiv:2309.10295.

- (with K. Tang). Hermitian manifolds with vanishing curvature, *Math. Z.*, (2024). arXiv:2201.03666.

- (with K. Tang). (ε, δ)–Quasi-Negativity and Positivity of the Canonical Bundle, *Journal of Geometric Analysis*, **34**, 180, (2024), arXiv:2305.01881.

- (with J. Stanfield). On the Gauduchon curvature of Hermitian manifolds, *Internat. J. Math.* , **34**, no. 7, paper no. 2350039, 37 pp., (2023). arXiv:2211.05973.

- Second-Order Estimates for Collapsed Limits of Ricci-flat Kähler Metrics, *Canad. Math. Bull.* , **66**, no. 3, pp. 912–926, (2023). arXiv:2106.13343.

- The Schwarz Lemma in Kähler and Non-Kähler Geometry, *Asian J. Math*, **27**, no. 1, pp. 121–134, (2023). arXiv:2109.06331.

- The Schwarz Lemma: An Odyssey, *Rocky Mountain J. Math.*, **52**, no. 4, pp. 1141–1155, (2022). arXiv:2110.04989.

- (with K. Tang). On the Weighted Orthogonal Ricci Curvature, *J. Geom. Phys.* , **193**, no. 104783, 13 pp., (2023). arXiv:2111.00346.

- On the Nonnegativity of the Dirichlet Energy of a Weighted Graph, *Bull. Aust. Math. Soc.*, **106**, no. 2, pp. 301–305, (2022).

- An Eigenvalue Characterization of the Dual EDM Cone, *Bull. Aust. Math. Soc.*, **106**, no. 1, pp. 67–69, (2022).

- Remarks on the Quadratic Orthogonal Bisectional Curvature, *J. Geom.*, **113**, no. 2, Paper No. 39, 8 pp., (2022). arXiv:2211.05362.

- Twisted Kähler–Einstein Metrics and Collapsing, arXiv:2003.14009.

- Some Remarks on the Wu–Yau Theorem, arXiv:2306.06509.

Selected Invited Talks.

- February 21, 2025. The University of New South Wales pure mathematics seminar.

- February 4, 2025. MATRIX conference on 'Geometry with Symmetries'.

- April 29, 2024. The University of Melbourne.

- March 27, 2024. Geometry with Symmetries Seminar.

- February 20, 2024. Generalized Ricci flow seminar.

- December 8, 2023. Australian Mathematical Society (Topology).

- December 5, 2023. Australian Mathematical Society (Geometric Analysis).

- June 5, 2023. Complex Analysis, Geometry, and Dynamics; Portorož 2023.

- June 3, 2023. The University of Rome "Tor Vergata".

- May 18, 2023. The University of Adelaide.

- May 17, 2023. The University of Adelaide.

- March 3, 2023. Differential Geometry Days at UQ; The University of Queensland.

- November 25, 2022. The Australian Geometric PDE Seminar.

- November 1, 2022. The University of Queensland.

- June 8, 2022. Monash University.

- June 1, 2022. Beijing International Center for Mathematical Research.

- April 1, 2022. The Australian Geometric PDE Seminar.

- March 25, 2022. The Australian Geometric PDE Seminar.

- December 7, 2021. The 63rd Annual Meeting of the Australian Mathematical Society (Geometry with Symmetries).

- April 15, 2020. Beijing International Center for Mathematical Research.

- December 10, 2019. Beijing International Center for Mathematical Research.

- October 29, 2019. The University of Sydney.

Visiting Research Positions.

- University of Grenoble, visiting Hervé Gaussier, June 2025.

- The University of Melbourne, visiting Diarmuid Crowley, April 2024.

- Tsinghua University, visiting Xiaokui Yang, March 2024.

- Beijing University, visiting Gang Tian, March 2024.

- The Australian National University, visiting Benjamin Andrews, July 2023.

- The University of Roma "Tor Vergatta", visiting Filippo Bracci, June 2023.

- The University of Adelaide, visiting Finnur Lárusson, May 2023.

- Monash University, visiting Julie Clutterbuck and Wenhui Shi, May 2022.

- The University of Sydney, visiting Zhou Zhang, October 2019.

- The University of Sydney, visiting Zhou Zhang, June–September 2018.

Student supervision.

- Joseph Kwong (UQ, Masters), cosupervised with Ramiro Lafuente, 2025–2027.

- Henry Wood (UQ), cosupervised with Ramiro Lafuente, 2026–2028.

- Aaron Tonkes (UQ, Honours), 2026.

- David Alexander (UNSW, Honours), 2025–2026. Undergraduate thesis, cosupervised with Timothy Buttsworth.

- Xavier Sauvage (UQ, Honours). Undergraduate thesis, cosupervised with Artem Pulemotov, 2024.

- Thomas Hegarty (UQ, Research project), Semester 2, 2025.

Lecturing.

- *Applied Mathematics 1 (MATH2305)*. Lecturing (204 students). ANU. Semester 1, 2022.

- *Differential Geometry (MATH3405)*. Lecturing (47 students). UQ. Semester 2, 2023.

- *Advanced Ordinary and Partial Differential Equations (MATH4407)*. Lecturing (18 students). UQ. Semester 2, 2023.

- *Functional Analysis (MATH3402)*. Lecturing (68 students). UQ. Semester 1, 2025.

Conference organisation. *Analytic and Geometric Methods on Complex Manifolds.* This is coorganised with Eleonora Di Nezza, Ramiro Lafuente, and Gang Tian.