

SAMUEL BLITZ

EMPLOYMENT AND EDUCATION

Masaryk University, Brno, CZ Postdoctoral Researcher, Department of Mathematics and Statistics Supervisor: Josef Šilhan	Started: 10/2022 Completed: 4/2025
University of California, Davis, CA, USA Doctor of Philosophy, Physics Supervisor: Dr. Andrew Waldron	Received: 6/2022 Cum. GPA: 3.95
University of California, Davis, CA, USA Master of Science, Physics	Received: 12/2017 Cum. GPA: 3.95

PUBLICATIONS & EPRINTS

- S. Blitz, G. Herczeg, D. McNutt. Potential Carroll structures and special Carrollian manifolds. arXiv:2601.20068.
- S. Blitz, A. R. Gover, J. Kopiński, A. Waldron. Einstein and Yang-Mills implies conformal Yang-Mills. arXiv:2601.09975.
- S. Blitz, A. R. Gover. Conformal hypersurface invariants and Bach-type boundary problems. arXiv:2511.02072.
- S. Blitz. Non-existence of higher-order conformal fundamental forms in odd dimensions. arXiv:2509.20554.
- S. Blitz. A breathing universe is consistent. arXiv:2507.06385.
- S. Blitz, J. Kopiński. Asymptotia of Kerr-de Sitter black holes. Accepted in *Class. Quantum Grav.* arXiv:2506.18169.
- S. Blitz, D. McNutt, P. Nurowski. Unique Carrollian manifolds emerging from Einstein spacetimes. *Class. Quantum Grav.* 42: 075006 (2025).
- S. Blitz, S. Majid. Quantum curvature fluctuations and the cosmological constant in a single plaquette quantum gravity model. *Class. Quantum Grav.* 42: 04LT01 (2025).
- S. Blitz, J. Šilhan. Holography of higher codimension submanifolds: Riemannian and conformal. *SIGMA* 21: 002 (2025).
- S. Blitz, J. Šilhan. Higher Fundamental Forms and Warped Product Hypersurfaces. arXiv:2410.06706v2.
- S. Blitz, R. Scherrer, O. Trivedi. The long freeze: an asymptotically static universe from holographic dark energy. *J. Cosmol. Astropart. Phys.* 063 (2025).
- S. Blitz, D. McNutt. Horizons that gyre and gimble: a differential characterization of null hypersurfaces. *Eur. Phys. J. C* 84: 561 (2024).
- S. Blitz, A. R. Gover, A. Waldron. Generalized Willmore energies, Q -curvatures, extrinsic Paneitz operators, and extrinsic Laplacian powers. *Commun. Contemp. Math.* 26(5):2350014 (2024).
- S. Blitz, A. R. Gover, J. Kopiński, A. Waldron. The Dirichlet-to-Neumann map for Poincaré–Einstein fillings. Accepted in *Rev. Mat. Iberoam.* arXiv:2307.08470.
- S. Blitz. Toward a classification of conformal hypersurface invariants. *J. Math. Phys.* 64: 082504 (2023).
- S. Blitz. A sharp characterization of the Willmore invariant. *Int. J. Math.* 34: 2350054 (2023).
- S. Blitz, A. R. Gover, A. Waldron. Conformal fundamental forms and the asymptotically Poincaré–Einstein condition. *Ind. Univ. Math. J.* 72(6):2215-2284 (2023).

N. Bao, S. Blitz, B. Stoica. Holographic entropy cone measures. Technical note. arXiv:1701.03498 [hep-th]

S. Blitz, R. F. Lebed. Tetraquark cusp effects from diquark pair production. *Phys. Rev. D* 91: 094025, (2015). arXiv:1503.04802 [hep-ph].

PRESENTATIONS, & TALKS, & WORKSHOPS

I Think Black Holes Are Cool and You Should Too	8/10/2025
Humanist Society of Greater Phoenix	Phoenix
Organizer	3/17-20/2025
Conformal Geometry and Submanifolds workshop	Brno
Asymptotically Kerr-de Sitter Spacetimes: Necessary Conditions	2/21/2024
At the Interface of Geometry and Analysis	University of Auckland
Asymptotically Kerr-de Sitter Spacetimes: Necessary Conditions	1/21/2024
45th Winter School Geometry and Physics	Srni
Extrinsic Geometry of Higher Codimension Submanifolds	10/27/2024
American Mathematical Society	Riverside
Extrinsic Geometry of Higher Codimension Submanifolds	5/7/2024
International Congress on Mathematical Physics 2024	Strasbourg
Conformal Submanifold Geometry	15/1/2024
44th Winter School Geometry and Physics	Srni
Conformal Submanifold Geometry	28/9/2023
Sophus Lie Seminar at UiT	Trømso
Conformal Submanifold Geometry	24/6/2023
Central European Seminar	Brno
A Classification of Conformal Hypersurface Invariants	18/1/2023
43rd Winter School Geometry and Physics	Srni
Conformal Fundamental Forms	14/6/2022
Conformal Geometry, Analysis, and Physics	University of Washington
Conformal Fundamental Forms	12/12/2021
Mathematical Physics Days 2021	Koç University
Conformal Fundamental Forms	21/10/2021
Analysis Seminar Fall 2021	Oklahoma State University
Conformal Fundamental Forms	15/10/2021
QMAP Seminar	University of California, Davis

GRANTS & AWARDS

COST Action CaLISTA Short Term Scientific Mission Grant	Awarded: 9/2023
Amount: \$1,455	Duration: 6 days
Location: Trømso, Norway	
Operational Programme Research, Development and Education Project	Awarded: 5/2023
Amount: \$130,000	Duration: 24 months
Location: Brno, Czechia	

REFEREE FOR JOURNALS

Differential Geometry and its Applications
Classical and Quantum Gravity
New Zealand Journal of Mathematics

TEACHING EXPERIENCE & OUTREACH

COST Action CaLISTA May 2023 - May 2025
Vice Science Communication Coordinator

- Initiate broader public outreach for the CaLISTA Action via social media.

- Participate in semiannual Core Group meetings.

Online Science Communicator

May 2022 - present

@blitzphd

- Communicating challenging physics and mathematics concepts without skimping on details.
- Approximately 500,000 followers across platforms.

University of California, Davis - Department of Physics

June 2018 - June 2022

Associate Instructor

- Lecturer for introductory physics courses for 80 to 180 students.
- Writing homework assignments, quizzes, and exams.
- Handling administrative duties associated with course instructors.
- Courses: PHY 9A, PHY 9B, PHY 9C.

University of California, Davis - Department of Mathematics

September 2017- March 2018

Teaching Assistant

- Grading quizzes, exams, and homeworks.
- Holding regular office hours, directly interacting with students.
- Courses: MAT 17A, MAT 17B

University of California, Davis - Department of Physics

September 2015 - March 2020

Teaching Assistant

- Leading discussion sections for physics courses for undergraduate students.
- Grading quizzes, exams, and homeworks.
- Holding regular office hours, directly interacting with students.
- Courses: PHY 7A, PHY 9A, PHY 9B, PHY 9C, PHY 9D.

REFERENCE LIST

Prof. Andrew Waldron

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Dr. Thomas Weideman

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