Michael Seifert

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Employment

- **Connecticut College,** New London, CT, USA
  Associate Professor 07/2020–present
  Assistant Professor 07/2014–06/2020
  Taught introductory, intermediate, and advanced undergraduate courses in physics, including labs. Supervised students in honors study, summer research, and independent study. Served on college-wide committees & working groups, including groups focused on general pedagogy & STEM pedagogy.
- **Williams College,** Williamstown, MA, USA
  Visiting Assistant Professor 08/2011–06/2014
  Taught introductory and advanced undergraduate courses in physics, including labs and tutorials where applicable. Supervised summer research and independent study students.
- **Eckerd College,** Saint Petersburg, FL, USA
  Visiting Assistant Professor 08/2010–08/2011
  Taught introductory and advanced undergraduate courses in physics, including labs where applicable.
- **Indiana University,** Bloomington, IN, USA
  Postdoctoral Researcher 09/2008–08/2010
  Under the supervision of Alan Kostelecký, conducted theoretical research into the mathematical and phenomenological properties of Lorentz symmetry breaking.

Education

- **Ph.D., University of Chicago** (Chicago, IL, USA) 2008
- **B.A. (Highest Honours), Swarthmore College** (Swarthmore, PA, USA) 2001

Selected Honors

- Visiting Sabbatical Researcher, Perimeter Institute, September–December 2017
- ARCS Foundation Fellowship, September 2005–August 2008
- NSF Graduate Research Fellowship, October 2002–September 2005
- Valentine Telegdi Prize, University of Chicago, September 2002
- Gregor Wentzel Teaching Prize, University of Chicago, June 2002
- Phi Beta Kappa, Swarthmore College, June 2001

Publications

- "Lorentz-violating gravity and the bootstrap procedure", **M. D. Seifert**. Class. Quant. Grav. **37**, 0655022 (2020).

- "Singular Hamiltonians in Lorentz-violating field theories", **M. D. Seifert**. Phys. Rev. **D100**, 065017 (2019).
- "Constraints and degrees of freedom in Lorentz-violating field theories", **M. D. Seifert**. Phys. Rev. **D99**, 045003 (2019).
- "Lorentz-Violating Gravity Models and the Linearized Limit", **M. D. Seifert**. Symmetry **10**, 490 (2018).
- "Extending the Graviton Propagator with a Lorentz-Violating Vector Field"
  M. D. Seifert, in *Proceedings of the Seventh Meeting on CPT and Lorentz Symmetry*, V.A. Kostelecký, ed. (World Scientific, Singapore, 2017.)
- "Direct-coupling lensing by antisymmetric tensor monopoles"
  K. N. Lau and **M. D. Seifert**. Phys. Rev. **D95**, 025023 (2017).
- "Lorentz violation and topological defects"
  M. D. Seifert, in *Proceedings of the Sixth Meeting on CPT and Lorentz Symmetry*, V.A. Kostelecký, ed. (World Scientific, Singapore, 2014.)
- "Topological-defect solutions in Lorentz-violating field theories"
  M. D. Seifert, in *Proceedings of the Fifth Meeting on CPT and Lorentz Symmetry*, V.A. Kostelecký, ed. (World Scientific, Singapore, 2011.)
- "Dynamical Lorentz symmetry breaking and topological defects"
  M. D. Seifert. Phys. Rev. **D82**, 125015 (2010).
- "Monopole solution in a Lorentz-violating field theory."
  M. D. Seifert, Phys. Rev. Lett. **105**, 201601 (2010).
- "Generalized bumblebee models and Lorentz-violating electrodynamics"
  M. D. Seifert, Phys. Rev. **D81**, 065010 (2010).
- "Vector models of gravitational Lorentz symmetry breaking"
  M. D. Seifert, Phys. Rev. **D79**, 124012 (2009).
- "Stability of spherically symmetric solutions in modified theories of gravity"
  M. D. Seifert, Phys. Rev. **D76**, 064002 (2007). Based largely on doctoral thesis work.
- "General variational principle for spherically symmetric perturbations in diffeomorphism covariant theories"
  M. D. Seifert and R. M. Wald, Phys. Rev. **D75**, 084029 (2007).
- "Modeling space with an atom of quantum geometry"
  S. A. Major and **M. D. Seifert**, Class. Quant. Grav. **19**, 2211–2228 (2002).
- "Angle and volume studies in quantized space"
  M. D. Seifert, undergraduate thesis, Swarthmore College. arχiv:gr-qc/0108047 (2001).

Recent undergraduate projects supervised

- **Tori Plaskon & Chloe Stults:** Summer students, 2021. Performed analysis of supernova data in anisotropic cosmological model.
- **Noah Garrison & Cam Angliss:** Summer students, 2020. Investigated black hole solutions in modified gravity theory including a vector field with non-zero VEV.

- **Lily Davey:** Summer student, 2019; independent study student, Fall 2019. Investigated anisotropic cosmologies in the presence of a vector field with non-zero VEV.
- **Manny Rosales:** Independent study student, Spring & Fall 2019. Developed data analysis techniques for "superluminal jet" project.
- **Kiryeong Park:** Summer student, 2017. Studied lensing properties of monopole solutions.
- **Jianbin (Ben) Guan:** Summer student, 2016 & 2017. Investigated observational signatures of interactions between light and Lorentz monopoles, with particular attention to "close approaches" between light rays and monopoles.
- **George Sarkar:** Summer student & thesis student, Summer 2016–Spring 2017. Investigated interactions of Lorentz monopoles.

Recent Talks & Presentations

- "Linear and Non-linear Lorentz-Violating Field Theories"
  Contributed talk, Workshop on Gravitational Aspects of Lorentz Violation, Bloomington, IN, March 13, 2021
- "Hamiltonians & degrees of freedom in 'Lorentz-violating' field theories"
  Contributed talk, Beyond General Relativity, Beyond Cosmological Standard Model, Warsaw, Poland, July 4, 2019
- "Strong gravity and the SME"
  Invited talk, Third Summer School and Workshop on the Lorentz- and CPT-violating Standard-Model Extension, Bloomington, IN, June 19, 2018
- "Lorentz violation, gravity, and the bootstrap procedure"
  Colloquium, Perimeter Institute, Waterloo, ON, Canada, November 23, 2017
- "Bootstrapping a Lorentz-violating gravity theory"
  21st International Meeting on General Relativity and Gravitation, New York, NY, USA, July 14, 2016
- "Extending the Graviton Propagator with a Lorentz-Violating Vector Field"
  Invited talk, Seventh Meeting on CPT and Lorentz Symmetry, Bloomington, IN, USA, June 22, 2016

Professional Development

- Transforming Undergraduate STEM Education Conference, November 2019 & November 2016

  Conferences organized by American Association of Colleges & Universities and Project Kaleidoscope. Focused on "exploring contemporary approaches to teaching, broadening participation, interrogating research studies, and verifying assessment tools for determining effectiveness."

- American Association of Physics Teachers (AAPT) Workshop for New Physics and Astronomy Faculty, November 2015

  Attended workshops on active engagement, technology use, inclusive teaching, and peer instruction.

Selected Professional Service & Outreach

- Invited speaker, Dante Society of Westerly, April 2022
- Organizer, STEM Pedagogy Reading Group, Connecticut College, September 2020–May 2021
- Judge, "Blue Apple" prize, Midwest Relativity Meeting, October 2017
- Center for Teaching & Learning seminar organizing committee, September 2015–May 2016
- **Referee for:** Physical Review Letters, Physical Review D, Classical and Quantum Gravity, Foundations of Physics, International Journal of Modern Physics D

Professional Affiliations

- American Physical Society
- APS Topical Group on Gravity
- Anacapa Society

Personal Information

- Place of birth: Winnipeg, MB, Canada
- Citizenships: Canada & USA
- Languages spoken: English (native), French (conversant)