

# Paul T. Allen

Associate Professor of Mathematics

updated January 5, 2022

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## Education

### University of Oregon, Eugene, OR

- Ph.D. in Mathematics, June 2007. Dissertation: *Timelike Minimal Submanifolds in Robertson-Walker Spacetimes*. Advisor: James Isenberg.
- M.S. in Mathematics, June 2003.

### University of Puget Sound, Tacoma, WA

- B.S. in Physics, Mathematics, May 2001. Cum Laude, Honors from each department, Phi Beta Kappa.

## Academic Positions

### Lewis and Clark College Department of Mathematical Sciences.

- Associate Professor of Mathematics 2016 – present.
- Assistant Professor of Mathematics, 2010 – 2016.
- Pamplin Society *Teacher of the Year* 2013-2014.

### Albert Einstein Institute Max Planck Institute for Gravitational Physics.

- Long-term Visitor, July 2009 – October 2009.

### University of Washington Tacoma Interdisciplinary Arts & Sciences.

- Affiliate Assistant Professor of Mathematics, June 2009 – June 2010.
- Assistant Professor of Mathematics, January 2009 – June 2009

**Albert Einstein Institute** Max Planck Institute for Gravitational Physics.

- Junior Scientist (Postdoctoral Fellow), October 2007 – December 2008.

**University of Oregon** Department of Mathematics.

- Graduate Teaching Fellow, September 2001 – June 2007.
- Donald and Darel Stein Graduate Student Teaching Award, 2007.
- D. K. Harrison research award, 2007.
- Distinguished Graduate Teaching Award (Mathematics), 2005.

## Papers

- Paul T. Allen, James Isenberg, John M. Lee and Iva Stavrov Allen. Asymptotic Gluing of Shear-Free Hyperboloidal Initial Data Sets. *Annales Henri Poincaré* (2021) <https://arxiv.org/abs/1912.02839>
- Paul T. Allen. Boundary Value Problems and Finite Differences. *College Math Journal* 47 (2016), no. 1, 34 - 41.
- Paul T. Allen, James Isenberg, John M. Lee, Iva Stavrov Allen. The shear-free condition and constant-mean-curvature hyperboloidal initial data. *Classical and Quantum Gravity*, Volume 33, Number 11. [arXiv:1506.06090](https://arxiv.org/abs/1506.06090).
- Paul T. Allen and Iva Stavrov Allen. Smoothly compactifiable shear-free hyperboloidal data is dense in the physical topology. *Annales Henri Poincaré* (2017) 18: 2789. [arXiv:1506.05842](https://arxiv.org/abs/1506.05842).
- Paul T. Allen, James Isenberg, John M. Lee, Iva Stavrov Allen. Weakly asymptotically hyperbolic manifolds. *Communications in Analysis and Geometry*, Volume 26 (2018), Number 1. [arXiv:1506.03399](https://arxiv.org/abs/1506.03399)
- Paul T. Allen, Adam Layne, Katharine Tsukahara. The Dirichlet problem for curve shortening flow. (unpublished) [arXiv:1208.3510](https://arxiv.org/abs/1208.3510)
- Paul T. Allen, Lars Andersson, Alvaro Restuccia. Local well-posedness for membranes in the light cone gauge. *Comm. Math. Phys.* 301 (2011), no. 2, 383-410. [http://arxiv.org/abs/0910.1488](https://arxiv.org/abs/0910.1488)
- Paul T. Allen, Alan D. Rendall. Asymptotics of linearized cosmological perturbations. *J. Hyperbolic Differ. Equ.* 7 (2010), no. 2, 255 - 277. [http://arxiv.org/abs/0906.2517](https://arxiv.org/abs/0906.2517)
- Paul T. Allen, Adam Clausen, James Isenberg. Near-constant mean curvature solutions of the Einstein constraint equations with non-negative Yamabe metrics. *Classical Quantum Gravity* 25 (2008), no. 7, 075009, 15 pp. [arxiv.org/abs/0710.0725](https://arxiv.org/abs/0710.0725)
- Paul T. Allen, Lars Andersson, James Isenberg. Timelike minimal submanifolds of general co-dimension in Minkowski space time. *J. Hyperbolic Differ. Equ.* 3 (2006), no. 4, 691 - 700. [arxiv.org/abs/math/0512036](https://arxiv.org/abs/math/0512036)

## Service to the Profession

- Pacific Northwest Geometry Seminar
  - local conference organizer 2017, 2020
  - co-PI on NSF grant 2019–present
- Mathematical Congress of the Americas 2021, co-organizer of Special Session 19: Geometric and Analytic Aspects of General Relativity
- Cambridge University Press, Textbook Advisory Board Member, January 2021–present
- Mathematics Association of America, Associate Editor for MAA Press Textbook Series, January 2021–present

## Selected Recent Presentations

- October 2019: Geometric Analysis Seminar at University of Oregon
- February 2019: Oregon Liberal Arts Mathematics Colloquium at Linfield College
- January 2019: Colloquium and Topology-Geometry Seminar at Oregon State University
- January 2018: Talk in AMS Special Session on Mathematical Relativity and Geometric Analysis at JMM
- October 2017: Talk at Pacific University
- March 2017: Talk at the Charleston AMS meeting
- February 2017: Short talk to math students at Lewis & Clark
- July 2016: Talk at BIRS workshop "Geometric Analysis and General Relativity"
- March 2016: Colloquium at University of Connecticut
- January 2016: I gave a short talk at the Joint Math Meetings.

## Teaching

Courses taught at Lewis & Clark College

- Math 131 Calculus I
- Math 132 Calculus II
- Math 233 Calculus III
- Math 225 Linear Algebra
- Math 235 Differential Equations

- Math 305 Partial Differential Equations (formerly titled Calculus IV)
- Math 355 Geometry
- Math 358 Topology
- Math 365 Complex Variables
- Math 441 Real Analysis
- Math 442 Advanced Topics in Analysis & Topology
- Core 107 Exploration & Discovery II (first-year seminar course)
- Core 121 Numbers (first-year seminar course)
- Math 103 Perspectives in Mathematics
- CS 171 Computer Science I
- Math 282 Modeling Competition Preparation

In addition, I have supervised many independent study courses and honors thesis projects on a wide variety of topics in the natural sciences, economics, computer science, and advanced mathematics.

## Service to Lewis & Clark College

College of Arts & Sciences, elected positions

- 2016–present: Curriculum Committee; committee chair 2019/2020, 2020/2021, 2021/2022
- 2019–2021: Faculty Council
- 2014–2016: Library and Educational Technology Committee
- 2010–2012: Admissions & Financial Aid Committee

Search committees

- 2015/2016: Physics Department
- 2013/2014: Sociology & Anthropology Department
- 2013: Graduate School of Education
- 2011/2012: Sociology & Anthropology Department
- 2010/2011: Physics Department

Other service

- 2020: Fall Academic Learning Logistics working group; chair
- 2016–present: Teaching Effectiveness Program Fellow
- 2011–2019: Rogers Steering Committee; chair 2019