Paul Melvin

Curriculum Vitae

Department of Mathematics
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Research Interests

Geometric and Quantum Topology

Education

Degrees

Ph.D. in Mathematics, University of California, Berkeley, May 1977
Thesis: Blowing up and down in 4-manifolds Advisor: Robion Kirby
B.A. in Mathematics, Haverford College, May 1971

Fellowships

Woodrow Wilson 1971-72 (honorary graduate fellowship)
National Science Foundation 1971-74 (graduate fellowship)

Employment

Bryn Mawr College	Professor	1992–present
	On the Hale Chair	2000–08
	Department Chair	2011–14, 2005–06, 1998–99, 1993–96
	Associate Professor	1987–92
	Assistant Professor	1981–87
U.C. Santa Barbara	Visiting Assistant Professor	1979–81
U.W. Madison	Assistant Professor	1977–79

Visiting Positions

Stanford University (Palo Alto)	Visiting Professor	2020 (Fall–remote)
Institute for Advanced Study (Princeton)	Visitor	2016 (Fall)
Math. Sci. Research Institute (Berkeley)	Member	2009-10
Institute for Advanced Study (Princeton)	Member	2002–03
Math. Sci. Research Institute (Berkeley)	Research Professor	1996–97

Newton Institute (Cambridge, England)	SERC Fellow	1992(Fall)
U.C. Berkeley	Research Associate	1989(Spring)
Stanford University (Palo Alto)	Visiting Assoc. Professor/Scholar	1988 89/ 1995(Summer)
University of Pennsylvania	Visiting Scholar	1985 86

Grants

AmericanInstituteofMathematics

SQuaRE Grants:

Trisections, Knotted Surfaces, and Symplectic 4-Manifolds (2018-24)
Stabilization in 4-dimensional topology (2014 17)
Augmentations, rulings, and generating families (2008 13)

MellonFoundation
Trico Faculty Forum Seed Grant (2017 18)
PACT Seminar Seed Grants (2014 17)
Faculty-Student Seminar in Topology (2005 06)
Tri-College Contact Seminar (2004 05)

NationalScienceFoundation

Research Grants:

Topological invariants of 3and 4-manifolds (FRG: 2003 06)
Quantum invariants of 3-manifolds (1992 95)
3-manifold invariants from quantum theory (1991 92)
Transformation groups on 3and 4-manifolds (1981 83)
4-manifolds and bordism of diffeomorphisms (1978 79)

Conference Grants:

Oxtoby Centennial Conference (at Bryn Mawr, October 2010)
Low-dimensional topology (at MSRI, June 1998)

BrynMawrCollege

Sabbatical Leaves:

Enhanced Sabbatical (1996-97)
Junior Faculty Research Leave (1985 86)

Faculty Research:

Research and Equipment Grants (1996 97, 1992 93, 1990 91)

Professional Service

PCMI (Park City Mathematics Institute) Steering Committee (2018 present)

Publications

1. Blowing up and down in 4-manifolds (UC Berkeley PhD Thesis), ProQuest LLC (1977), 1 73.

2. Slice knots and property R (with R. Kirby), Invent. Math. **45**(1978), 57 59.

3. Bordism of Diffeomorphisms, Topology **18**(1979), 173 175.

4. On 4-manifolds with singular torus actions, Math. Ann. **256**(1981), 255 276.

5. Tori in the diffeomorphism groups of simply connected 4-manifolds, Math. Proc. Camb. Phil. Soc. **91**(1982), 305

23. Canonical framings for 3-manifolds (with R. Kirby), Turk. J. of Math. **23** (1999), 89-115, (arXiv:9903056); also in: Proc. Gokova Geometry-Topology Conf. 1998.

24. The E_8-manifold, singular bers and handlebody decompositions (with R. Kirby), Proceedings of the Kirby Fest, Geometry & Topology Monographs **2** (1999), 233 258 (arXiv:9911253).

25. Finite type invariants of 3-manifolds (with T. Cochran),

Other Manuscripts

42. Milnor's Triple Linking Number and Massey Products, 2012 unpublished.

43. In nite families of homologous 2-spheres in 4-manifolds (with D. Auckly, H-J. Kim and D. Ruberman), 2018 unpublished.

44. Spherically fertile 4-manifolds (with D. Auckly, H-J. Kim and D. Ruberman), in preparation.

Invited Lectures

Colloquia and Seminars.

UC Santa Barbara Topology Seminar (October 2023) "Spherically fertile 4-manifolds"

Penn Geometry/Topology Seminar (February 2023) "Homologically fertile 4-manifolds"

Philadelphia PACT Seminar (February 2023, series of four talks) "Homologically fertile 4-manifolds"

Philadelphia PACT Seminar (September 2022) "FJ/F3 J3nan(if)lds 9.963 T9o9 Tf[-1u]TJ/F2 9.963 Tf())Tj/F3 9.963 Tf(

Mathematical Sciences Research Institute PlayGround (February 2010) "Amphicheiral links"

Berkeley Math Circle (February 2010) "Enhanced linking"

Rice University Colloquium (December 2009) "From asteroids to bicycles"

San Francisco State University Colloquium (November 2009) "From asteroids to bicycles"

Claremont Colleges Topology Seminar (November 2009) "Degree formulas for higher order linking"

Joint Caltech/UCLA/USC Topology Seminar (Nov 2009) "Degree formulas for higher order linking"

University of California, Berkeley (Oct 2009) "Degree formulas for higher order linking"

University of Pennsylvania (Apr 2009) "Applications of quantum topology to classical topology"

Philadelphia PACT Seminar "3-dimensional surgery and 4-dimensional handlebodies" (Jan, Feb 2009, two

University of Pennsylvania (Feb 1999) "Quantum cyclotomic orders of 3

Refereeing

Grants: National Science Foundation; Israeli Science Foundation; Binational Science Foundation.

ResearchPapers: Annals of Mathematics; Journal of the American Mathematical Society; Journal of the European Mathematical Society; Proceedings of the National Academy of Sciences; Inventiones Mathematicae; Journal of Mathematical Physics; Mathematische Annalen; American Mathematical Society Proceedings and Transactions; Geometry& Topology; Topology; Math Proceedings of the Cambridge Philosophical Society; Paci c Journal of Math; Communications in Analysis and Geometry; American Mathematical Monthly; Mathematics Magazine; Journal of Knot Theory and its Rami cations; Georgia International Conference Proceedings.

Research Students

Ph.D.Students		CurrentPosition
Isaac Sundberg	2021	Max Planck Institute (Postdoctoral Fellow)
Hannah Schwartz	2019	Princeton University (Postdoctoral Research Associate)
Kathryn Bryant	2016	SeatGeek (Data Scientist)
Jennifer Hom	2011	Georgia Tech (Associate Professor)
Jonah Swann	2010	bRainmaker (Founder)
Gowri Meda	1997	Oregon Episcopal School (Teacher)

SearchCommittees

Mathematics Department	2017 18, 10 11, 08 09, 04 05, 00 01
	1992 93(chair), 1987 91
Physics Department	2006-07, 04-05
Bryn Mawr Computer Science Department	1992 93(chair)
Haverford Math Searches	1994 95, 1985 86
Keck Fellowship	2001-02
Noether Lectureship	1997-98(cochair)

Other College Service

Solo and Chamber Music Recitals at Bryn Mawr (several/year)	1984 2011
Panelist and Performer in A Conversation with Emanuel Ax	2006
Cofounder of Chamber Music Society at Bryn Mawr	1985
Faculty Research Evening Lecture	1993
Prospectives Lecture	1990
Panelist for Gathering of High School Counselors	1987
Panelist for Alumni Gathering	1983

Departmental Service

Chair	2011 14, 05 06, 1998 99, 93 96
Director of Graduate Studies	2017 2020, 01 02, 1999 2000, 1981 92
Colloquium Coordinator	2021 present, 2012 13, 06 07, 04 05, 00 01, 1997 98, 81 90
Putnam Club Advisor	2003 04
Computer Coordinator	2005 06, 04 05

Supervised Summer Research

Undergraduates	2004 06, 00, 1990
Graduates	2004 present, 1998 01, 94, 91