Paul Melvin

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Curriculum Vitae

Department of Mathematics
Bryn Mawr College
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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)

Academic Positions

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	Affiliated Faculty	2024–present
	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)
	Member	2002–03
Math. Sci. Research Institute (Berkeley)	Member	2009–10
	Research Professor	1996–97

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

Grants

American Institute of Mathematics

SQuaRE Grants:

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

Mellon Foundation

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)

National Science Foundation

Research Grants:

Topological invariants of 3 and 4-manifolds (FRG: 2003–06)
Quantum invariants of 3-manifolds (1992–95)
3-manifold invariants from quantum theory (1991–92)
Transformation groups on 3 and 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)

Bryn Mawr College

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), 305–314.
6. *Algebraic knots are algebraically dependent* (with C. Livingston), Proc. Amer. Math. Soc. **87** (1983), 179–180.
7. 2*-sphere bundles over compact surfaces*, Proc. Amer. Math. Soc. **92** (1984), 567–572.
8. 4*-dimensional oriented bordism*, Contemp. Math. **35** (1984), 399–405.
9. *Abelian invariants of satellite knots* (with C. Livingston), in "Geometry and Topology" (Maryland 1984), Springer Lecture Notes **1167** (1985), 217–227.
10. *The Smale invariant of a knot* (with J. Hughes), Comment. Math. Helv. **60** (1985), 615–627.
11. 4*-manifolds with large symmetry groups* (with J. Parker), Topology **25** (1986), 71–83.
12. *Fibred knots of genus* 2 *formed by plumbing Hopf bands* (with H. R. Morton), J. London Math. Soc. **34** (1986), 159–168.
13. 3*-dimensional bordism* (with W. Kazez), Mich. Math. J. **36** (1989), 251–260.
14. *Evaluations of the* 3*-manifold invariants of Witten and Reshetikhin-Turaev for sl*(2,$\mathbb{C}$) (with R. Kirby), London Math. Soc. Lecture Notes **151** (1990), 101–114.
15. *The* 3*-manifold invariants of Witten and Reshetikhin-Turaev for sl*(2,$\mathbb{C}$) (with R. Kirby), Invent. Math. **105** (1991), 473–545.
16. *Templates and framed braids* (with N. Tufillaro), Phys. Rev. A **44** (1991), 3419–3422.
17. *Quantum invariants of lens spaces and a Dehn surgery formula* (with R. Kirby), Abstracts Amer. Math. Soc. **12** (1991), 435.
18. *Relative Rotation Rate Package* (with A. Lorentz and N. Tufillaro), Appendix G in "An Experimental Approach to Nonlinear Dynamics and Chaos" by N. Tufillaro, T. Abbott and J. Reilly, Addison-Wesley (1992), 314–322.
19. *Quantum invariants at the sixth root of unity* (with R. Kirby and X. Zhang), Commun. Math. Phys. **151** (1993), 607–617.
20. *Dedekind sums,* μ*-invariants and the signature cocycle* (with R. Kirby), Math. Ann. **299** (1994), 231–267.
21. *The coloured Jones function* (with H. R. Morton), Commun. Math. Phys. **169** (1995), 501–520.
22. *Perturbative invariants* (with R. Kirby), k-slice 2-knots (with T. Cochran), and other contributions to Problems in low-dimensional topology, in "Geometric Topology", Vol. **2**, W.H. Kazez (ed.), Amer. Math. Soc. and International Press (1997), pp. 127–8, 258, 276, 347–351.

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 fibers 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), Invent. Math. **140** (2000), 45–100 (arXiv:9805026).

26. *Quantum cyclotomic orders of* 3*-manifolds* (with T. Cochran), Topology 40 (2001), 95–125, (arXiv:9809129).

27. *A geometric interpretation of Milnor's triple linking numbers* (with B. Mellor), Algebraic & Geometric Topology **3** (2003), 557–568 (arXiv:0110001).

28. *Local surgery formulas for quantum invariants and the Arf invariant* (with R. Kirby), Proceedings of the Casson Fest, Geometry & Topology Monographs **7** (2004), 213–233 (arXiv:0410358).

29. *The nonuniqueness of Chekanov polynomials of Legendrian knots* (with S. Shrestha '07 BMC), Geometry & Topology **9** (2005), 1221–1252 (arXiv:0411206).

30. *A topological menagerie*, Amer. Math. Monthly **113** (2006), 348–351 (arXiv:0412486).

31. *A non-smoothable four-manifolds with infinite cyclic fundamental group* (with S. Friedl, I. Hambleton and P. Teichner), Int. Math. Res. Not. 2007 (rnm31) (arXiv:0611077).

32. *Triple linking numbers, ambiguous Hopf invariants and integral formulas for three-component links* (with D. DeTurck, H. Gluck, R. Komendarczyk, C. Shonkwiler and S. Vela-Vick), Matematica Comtemporanea (DoCarmo Festshrift) **34** (2009), 251–283 (arXiv:0901.1612).

33. *The Milnor degree of a* 3*-manifold* (with T. Cochran), Journal of Topology **3** (2010), 405–423 (arXiv:0902.1731).

34. *Cohomotopy Sets of* 4*-manifolds* (with R. Kirby and P. Teichner), Proceedings of the Freedman Fest, Geometry & Topology Monographs **18** (2012), 161–190 (arXiv:1203.1608).

35. *Generalized Gauss maps and integrals for three-component links: Toward higher helicities for magnetic fields and fluid flows* (with D. DeTurck, H. Gluck, R. Komendarczyk, C. Shonkwiler and S. Vela-Vick), J. Math. Phys. **54**, 013515 (2013), 48 pages (arXiv:1101.3374).

36. *Generalized Gauss maps and integrals for three-component links: Toward higher helicities for magnetic fields and fluid flows, Part II* (with D. DeTurck, H. Gluck, R. Komendarczyk, H. Nuchi, C. Shonkwiler and S. Vela-Vick), Algebraic & Geometric Topology **13** (2013) 2897–2923 (arXiv:1207.1793).

37. *Stable isotopy in four dimensions* (with D. Auckly, H-J. Kim and D. Ruberman), J. London Math. Soc. **91** (2) (2015) 439-463 (arXiv:1406.4937).

38. *Equivariant corks* (with D. Auckly, H-J. Kim and D. Ruberman), Algebraic & Geometric Topology **17** (2017) 1771–1783 (arXiv:1602.07650).

39. *Isotopy of surfaces in* 4*-manifolds after a single stabilization* (with D. Auckly, H-J. Kim, D. Ruberman and H. Schwartz), Advances in Mathematics **341** (2019) 609–615 (arXiv:1708.03208).

40. *Higher order corks* (with H. Schwartz), Invent. Math. on line version (2020) doi.org/10.1007/s00222-020-01009-x, print version **224** (2021) 291–313 (arXiv:1902.02840).

41. *Equivariant hyperbolization of* 3*-manifolds via homology cobordisms* (with D. Auckly, H-J. Kim and D. Ruberman), Topology and its Applications **333** (2023) 1–23 (108485) (arXiv:1804.03777).

Other Manuscripts

42. *Milnor's Triple Linking Number and Massey Products*, 2012 unpublished.
43. *Infinite 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.
45. *Fourier transforms of symmetric integer convex polygons* (with S. Robbins), in preparation.

Invited Lectures

Colloquia and Seminars.

Penn Geometry/Topology Seminar (April 2024) "Two unexpected theorems about 5"
Philadelphia PACT Seminar (April 2024) "Arnold's quintic perspective"
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) "Fourier analysis on polytopes"
Park City Math Institute UFP (July 2022) "Fourier analysis on polytopes and Desmos "
Georgia–Georgia Tech Topology Seminar (October 2019) "Smooth 4-manifolds and higher order corks"
Philadelphia PACT Seminar (September 2019, three talks) "Higher Order Corks"
Philadelphia PACT Seminar (Nov–Dec 2018, two talks) "Exotic 4-dimensional snapshots"
University of Pennsylvania (February 2018) "Isotopy in 4-manifolds after stabilization"
University of Texas (Austin) (November 2017) "One is enough"
Triangle Topology Seminar at Duke University (October 2017) "One is enough"
Princeton University Topology Seminar (November 2016) "Higher Order Corks"
Kansas State University Colloquium (September 2016) "4-Dimensional Exoticity"
Kansas State University Topology Seminar (September 2016) "Embeddings of the Mazur Cork"
Penn Geometry/Topology Seminar (April 2015) "Exotic dissolution in simply-connected 4-manifolds"
Indiana University Topology Seminar (April 2014) "Stable isotopy in 4-manifolds"
Philadelphia PACT Seminar (Feb-April 2014, four talks) "Dissolution of 4-dimensional exoticity"
Tetrahedral Geometry/Topology Seminar (February 2014) "Dissolution of 4-dimensional exoticity"
University of Virginia Topology Seminar (November 2013) "Exotic 2-spheres in 4-manifolds"
University of Georgia Topology Seminar (October 2013) "Exotic 2-spheres in 4-manifolds"
Mathily Workshop (July 2013) "Linking"
Columbia University Geometric Topology Seminar (May 2013) "Spherical projections of 4-manifolds"
Knots in Washington XXXV (Dec 2012, Opening Colloquium) "A Knotty Bucket List"
Philadelphia PACT Seminar (Fall 2012, five talks) "Cohomotopy Theory"
Tetrahedral Geometry/Topology Seminar (October 2011) "Degree formulas for higher order linking"
Temple University Colloquium (October 2011) "Asteroids, triple linking and bicycles"

University of Pennsylvania (February 2011, 2 talks) "Cohomotopy Theory of 4-manifolds"

Philadelphia PACT Seminar (2010-11) "Link concordance" (Fall 2010); "Cerf Theory" (Spring 2011)

Tulane University Colloquium (April 2010) "Asteroids, triple linking and bicycles"

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 talks); "Topological 4-manifolds with infinite cyclic fundamental group" (Oct 2008)

University of Pennsylvania (Apr 2008) "Higher order linking invariants"

Philadelphia PACT Seminar (Feb–Mar 2008, series of four talks) "On the Milnor degree"

University of Pennsylvania (Feb 2008) "Topological 4-manifolds"

Kansas State University: *William J. Spencer Lecture* (May 2007) "Topological 4-manifolds and slice knots"; Topology Seminar (May 2007) "What does quantum topology tell us about classical topology"

Philadelphia PACT Seminar (Oct-Nov/2006, series of four talks) "Smooth 4-manifolds"

University of Pennsylvania (Mar 2006) "Fertile Legendrian knots"

Philadelphia PACT Seminar (November 2005) "Ng's bound for the Thurston-Bennequin number from Khovanov homology"

University of California, Santa Barbara (Dec 2004) "Contact Homology of Legendrian knots"

University of California, Berkeley (Dec 2004) "Contact Homology of Legendrian knots"

University of Texas, Austin (Oct 2004) "Contact Homology of Legendrian knots"

Tri-College Contact Seminar (Sep 2004) "Poincare-Chekanov polynomials for Legendrian knots"

University of California, Berkeley (July 2004) "The Nonuniqueness of Chekanov polynomials of Legendrian knots"

Tri-College Contact Seminar (April 2004, series of 4 lectures) "Heegaard Floer homology"

University of Pennsylvania (January 2004) "Combinatorial aspects of Ozsvath-Szabo theory"

Bryn Mawr/Haverford Colloquium (Sep 2003) "Enhancing the Alexander polynomial: an introduction to Ozsvath-Szabo theory"

Elizabethtown College (May 2003) "Enhancing the Alexander polynomial"

Columbia University (Apr 2003) "The Milnor degree and quantum orders of 3-manifolds"

University of California, Berkeley (Apr 2003) "The Milnor degree and quantum orders of 3-manifolds"

Princeton University (Apr 2003) "The Milnor degree and quantum orders of 3-manifolds"

Rice University Colloquium (Mar 2003) "Holomorphic disks and topology: on the work of Peter Ozsvath and Zoltan Szabo"

CUNY Graduate Center, Einstein Chair Seminar (March 2001, series of 3 talks) "Finite type invariants in low-dimensional topology"

Microsoft Corporation (December 2000, 2 talks) "Analyticity of quantum invariants"

Haverford College Colloquium (Oct 2000) "Who wants to be a millionaire: The Poincaré Conjecture"

University of Pennsylvania (April 2000) "The topology of complex surfaces"

SUNY Buffalo Colloquium (Nov 1999) "Topology of complex surfaces"

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

Istanbul: Feza Gursey Institute (May 1998) "The space of 3-manifolds"

Rice University Colloquium (Mar 1998) "Quantum topology and the theory of finite type invariants"

University of Pennsylvania (Nov 1997) "Finite type invariants of 3-manifolds from quantum topology"

Rutgers University (Nov 1997) "Finite type invariants of 3-manifolds"

Mathematical Sciences Research Institute, Berkeley (1996-97, series of 7 talks) "On the combinatorial classification of finite type invariants"

Conference Talks:

(Virtual) Tech Topology Summer School (July 2021) "Ample 4-manifolds"

(Virtual) Summer Trisectors Workshop (June 2021) "Stabilizations of trisections of 4-manifolds"

Park City Mathematics Institute Undergraduate Faculty Program Lecturer, July 2019 "Bordism, Cerf Theory, and the Kirby Calculus" (12 lectures)

American Institute of Mathematics SQuaRE Meetings

"Gluck twists and algebraic curves in complex projective space" (March 2019)
"Equivariant hyperbolization of 3-manifolds" (July 2017)

American Institute of Mathematics Trisections Workshop (March 2017) "Smooth 4-Manifolds and their Knotted Surfaces"

University of Georgia Topology Conference (May 2016) "Mazur Magic"

Gokova Geometry/Topology Conference (May 2013) "Spherical projections of 4-manifolds"

George Washington University Knots in Washington XXXV (Dec 2012) Opening Colloquium: n "A Knotty Bucket List"

Wesleyan University (AMS Sectional Meeting Oct 2008) "Topological 4-manifolds with infinite cyclic fundamental group"

Gokova Turkey, FRG Workshops: (June 2005) "Contact Homology of Legendrian knots", (June 2004, several lectures) "Khovanov cohomology and the Milnor conjecture", (June 2003, several lectures) "Knot Floer homology"

Banff, Canada (BIRS: *Knots and Their Manifold Stories* May 2004) "Knot Floer homology: Enhancing the Alexander polynomial"

BIRS: *Floer Homology* (Nov 2003) "The Maslov index"

Louisiana State University (Louisiana Topology, Nov 1998) "Quantum cyclotomic orders of 3-manifolds"

Boise State University (Cascade Topology, Nov 1998) "The theory of finite type invariant and the analyticity of quantum invariants"

Gokova Geometry/Topology Conference (May 1998) "Analyticity of quantum invariants and Reidemeister torsion"

University of Chicago Workshop on Topological Quantum Field Theory: Invariants of 3-Dimensional Manifolds (Feb 1992) "Quantum invariants of 3-manifolds"

Conferences

Conference Organization:

Park City Mathematics Institute

"Extremal and Probabalistic Combinatorics" July 2025
"Motivic Homotopy Theory" July 2024
"Quantum Computation" July-August 2023
"Number Theory Informed by Computation" July-August 2022
"Number Theory, Quantum Comp. and Motivic Homotopy Theory" (Virtual) July-August 2021
"Quantum Field Theory and Manifold Invariants" July 2019

American Institute of Mathematics, SQuaRE Meetings

"Trisections, knotted surfaces, and symplectic 4-manifolds" March 2019 – present (co-organizer)
"Stabilization in 4-Dimensional Topology" Summers 2015–17 (organizer)
"Augmentations, Rulings, and Generating Families" Summers 2009–13 (co-organizer)

Fields Institute of Mathematics (co-organizer)

"Flavours of Gauge Theory: Rubermania" May 2016

Philadelphia Area Topology (PATCH) 2014–present (co-organizer of monthly conference)

Bryn Mawr College (co-organizer)

MAA–EPaDel Regional Conference November 2011
"Oxtoby Centennial Conference" October 2010

Gokova (Turkey) Geometry/Topology Institute (co-organizer)

"FRG Workshops on Ozsvath-Szabo Theory" June 2003, 2004 and 2005

Microsoft Corporation (Seattle, WA)

"Topological Aspects of Gauge Theory" January 2003

Mathematical Sciences Research Institute (co-organizer, chaired sessions)

"Low-dimensional Topology" (the *Kirby Fest*) June 1998
"Combinatorial Aspects of Finite Type and Quantum Invariants" January 1997

Additional Invited Conference/Workshop Participation:

Trisectors Virtual Workshops 2020, 2021 and 2022

UC Berkeley "Kirby-Scharlemann-Thompson 80-70-60 Birthday Conference" June 2018

Oaxaca (Mexico) "Gauge Theory and 4-Manifolds" August 2017

Rice University "Topology in Dimension 3.5" June 2016

Gokova (Turkey) "Geometry and Topology" Conferences 1998, 2003–05, 2013 and 2014

Banff IRS Workshop "Parametrized Morse Theory in Low-Dimensional and Symplectic Topology", March 2014 (Cochaired TQFT Problem Session)

Max Planck Institute "4-Manifolds Workshop", June 2013

Mathematical Sciences Research Institute Workshops

"Homology Theories of Knots and Links", Jan 2010
"Symplectic and Contact Geometry and Topology", Aug 2009
"Low Dimensional Topology" Aug 2008
"Four Dimensional Manifolds" Jan 1997

"Computational and Algorithmic Methods in Three Dimensional Topology" Mar 1997
"Knots and 3-manifolds" and "Combinatorics and Low-dimensional Topology" Aug 1997

American Institute of Mathematics Workshop "Legendrian and Transverse Knots" Sep, 2008

Park City Mathematics Institute "Low Dimensional Topology" June–July, 2006

Clay Institute (Budapest) "Floer homology, gauge theory and low-dimensional topology" June, 2004

Warwick Mathematics Institute "Workshop on Geometry and Topology" July 2002

UC San Diego "The Influence of Physics on Topology" Aug 2000

McMaster University "Geometry and Topology of 4-Manifolds" July 1990

Refereeing

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

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

Research Students

Ph.D. Students		**Current Position**
Isaac Sundberg *Khovanov homology of slice disks*	2021	Max Planck Institute (Postdoctoral Fellow)
Hannah Schwartz *Exotic phenomena in dimension four*	2019	Princeton University (Postdoctoral Research Assoc.)
Kathryn Bryant *Slice implies mutant ribbon for* 5*-stranded pretzel knots*	2016	SeatGeek (Data Scientist)
Jennifer Hom *Heegaard Floer invariants and cabling*	2011	Georgia Tech (Associate Professor)
Jonah Swann *Khovanov-Jacobsson classes for spanning surfaces*	2010	bRainmaker (Founder)
Gowri Meda *Sewn up and Surgered Sewn-up Link Exteriors:* *Simple formulas for Lescop's Invariant*	1997	Oregon Episcopal School (Teacher)

Master's Students

Avalon Vanis	2023	A new vocabulary for studying knot traces of unknotting number one knots
Isaac Sundberg	2018	On fibering 3-manifolds
Hannah Schwartz	2014	On and off the grid: an exploration of Heegaard Floer homology
Kathryn Bryant	2013	Lens spaces: Constructions, classification, and the mapping class group
Aditi Vashist	2008	Torsion in Khovanov homology
Cristina Nistor	2005	Tangling Legendrian knots
Ben Allen	2002	A classification of certain CW-complexes by Reidemeister torsion
Rachel Thomas	2001	Weight systems
Zvezdelina Stankova	1992	Representation theory of semisimple Lie algebras
Bo Liang	1992	Lie algebras and representation theory
Gowri Meda	1992	Classification of semisimple Lie algebras
Julia Malik	1992	Knot theory: the new polynomial invariants
Zvezdelina Stankova	1992	Forbidden subsequences
Becky Plassman	1988	The Thom-Pontrjagin construction and its applications

Senior Honors Thesis Students

Ziwei Tan	2024	Knot theory
Xingya Wang	2019	Introduction to Khovanov homology and related knot invariants
Wenqi Wang	2018	Persistent homology computation and implementation
Maddie Hanson-Colvin	2016	Normal rulings of Legendrian satellites: uses and construction
Bingxi Lin	2016	Persistent homology and its application to data analysis
Paula Sun	2016	Computational persistent homology and its application
Xinyuan Dong	2013	DNA topology
Sowmya Srinivasan	2013	A walk through "Galois' Dream"
Annie Woepse	2012	Number theory and cryptography
Bethie Azuma	2011	Constructions of smooth curves and surfaces
Melanie Edwalds	2008	An energetic, topological and geometric look at $[n]$-M obiusenes
Katie Haymaker	2007	Isospectral lattices and quadratic forms
Cara Petonic	2007	Intrinsic linking of complete graphs
Danny Tang	2007	Thurston-Bennequin bound of Legendrian links
Aditi Vashist	2007	An investigation of Lie algebras and representation theory
Emma Haddad	2002	Elements of representation theory
Debbie Ciucci	2001	Random walks on string links
Anna Hu	2001	On the unknotting numbers of rational knots
Rachel Thomas	2000	Chirality of links
Cecilia Diniz	1999	Quantum spin invariants of lens spaces
Suzanne Drennon	1996	Wedderburn's structure theorem
Amy Sekara	1996	Galois theory and differential equations
Rebecca Buchanan	1995	The HOMFLY polynomial and related link invariants
Rochelle Lao	1995	Knot theory and statistical mechanics
Amy Lorentz	1992	Factorization in braid group & Dehn surgery constructions for lens spaces
Gwen Lloyd	1991	Topological invariants and Gauss sums
Tina Hughes	1990	Polynomial invariants of knots and links
Rebecca Earle	1985	Finiteness of the ideal class group
Susan Shannon	1983	Projective measured foliations and the compactification of Teichmuller space

College Committees

Graduate Council	2017–2020, 2005–09 (chair 2018, 2007–08)
Promotion of R. Eisenberg (ad hoc)	2019
Committee for Coordination of the Sciences	2011–13, 05–06, 98–99, 93–96
Search for Dean of Graduate Studies (ad hoc)	2009
Advisory Council	2007–08
Curriculum Committee	2005
Review of the Dean of A&S (ad hoc)	2004
Promotion of R. D. Kumar (ad hoc)	2004 (chair)
Undergraduate Awards and Fellowships	2003–04
Awards and Grants	1998-2001 (chair 2000–01)
Selection for the Gail Schweitzer Prize	1994
Parents Day Committee	1990
1902 Lectures Committee	1989–90
Admissions Committee	1986-88
Bicollege Curriculum Committee Solomon Amendment	1984–85

PhD Supervising Committees

Carlos Cartagena (Physics)	2019–23 (chair)
Isaac Sundberg (Math)	2017–22 (director)
Lindsay Dever (Math)	2017–22
Daniel White (Math)	2019–21
Hannah Schwartz (Math)	2014–19 (director)
Danielle Smiley (Math)	2013–19
Samantha Pezzimenti (Math)	2013–18
Ziva Myer (Math)	2013–17
Frank Romascavage (Math)	2012–17
Kathryn Bryant (Math)	2012–16 (director)
Adam Levine (Math – Columbia U)	2009–10 (outside member)
Eva Goedhart (Math)	2009–15
Laura Mansfield (Math)	2009–12 (director)
Alyssa Bohen (Chemistry)	2008–12 (chair)
Elliott Tammaro (Physics)	2008–11 (chair)
Jen Hom (Math – U Penn)	2008–11 (director)
Linda Houser (Social Work)	2006–12 (chair)
Chris Mickelwright (Math)	2009–13
Matthew Fury (Math)	2008–11
Daniel Wisniewski (Math)	2006–10
Ayako Fukui (Math)	2006–09
Jonah Swann (Math)	2004–10 (director)
Sherry Teti (Math)	2004-08
Beth Campbell (Math)	2004–06
Michael Jay McClure (Art History)	2003–06
Jill Jordan (Math)	2003–05
John Matulis (Math)	2002–04 (director)
Jennifer Dalton (Math)	2001–09
Cathy Battiste (Math)	1999–2005
Bogdan Butoi (Math)	1997–2001
Kathryn Racette (Psychology)	1994–99 (chair)
Amber Salzman (Math)	1993–2002
Tanya Schmah (Math)	1993–96 (director)
Gowri Meda (Math)	1992–97 (director)
Jean Mastrangeli (Math)	1992–97
Pamela Seida (Chemistry)	1992–94 (chair)
Regina Cohen (Math)	1991–93
Sister Ann Heath (Math)	1990–92
Chris Palmer (Physics)	1990–91

Search Committees

Mathematics Department	2022–24, 2017–18, 2010–11, 2008–09, 2004–05, 2000–01 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, 2005–06, 1998–99, 1993–96
Director of Graduate Studies	2017–2020, 2001–02, 1999–2000, 1981–92
Colloquium Coordinator	2021–24, 2012–13, 2006–07, 2004–05, 2000–01, 1997–98, 1981–1990
Putnam Club Advisor	2003–04
Computer Coordinator	2004–06

Supervised Summer Research

Undergraduates	2004–2006, 2000, 1990
Graduates	2004–2021, 1998–2001, 1994, 1991