

PETER EVARTS HASKELL

EDUCATION

A.B	Harvard University	1977
Ph.D.	Brown University	1982

PROFESSIONAL EXPERIENCE

Assistant Professor	Purdue University	1982-87
Member	Math. Sci. Res. Inst.	1984-85
Assistant Professor	U.S. Naval Academy	1987-88
Assistant Professor	Virginia Tech	1988-94
Associate Professor	Virginia Tech	1994-2003
Professor	Virginia Tech	2003-
Interim Department Chair	Virginia Tech	2007- 2009
Department Chair	Virginia Tech	2009- 2018

RESEARCH INTERESTS

Index Theory

OUTSIDE RESEARCH SUPPORT

Principal Investigator, NSF grants, 1983-1991; 1992-1994; 1995-2001.
Principal Investigator, NSA workshop grant, 2006-2007.

VITA

Birthdate:	January 22, 1956
Birthplace:	New York, New York
Marital Status:	Married
Children:	Two
Citizenship:	USA

PUBLICATIONS

1. Index theory on curves, Trans. Amer. Math. Soc. 288 (1985), 591-604.
2. Index theory of geometric Fredholm operators on varieties with isolated singularities, K-Theory 1 (1987), 457-466.

3. (with J. Fox) A new proof of the K-amenability of $SU(1,1)$, Index Theory of Elliptic Operators, Foliations, and Operator Algebras, J. Kaminker, K. Millett and C. Schochet, eds., Contemp. Math. vol 70, Amer. Math. Soc. Providence, R.I., 1988, pp. 103-111.
4. (with J. Fox and I. Raeburn) Kasparov Products, KK equivalence, and proper actions of connected reductive Lie groups, J. Operator Theory 22 (1989), 3-29.
5. Direct limits in an equivariant K theory defined by proper cocycles, Michigan Math. J. 36 (1989), 17-27.
6. L^2 Dolbeault complexes on singular curves and surfaces, Proc. Amer. Math. Soc. 107 (1989), 517-526.
7. (with J. Fox and W. Pardon) Two themes in index theory on singular varieties, Operator Theory/Operator Algebras and Applications, W. Arveson and R. Douglas, eds., Proc. Symp. Pure Math., vol. 51, part 2, Amer. Math. Soc., Providence, RI, 1990, pp. 103-115.
8. (with J. Fox) Index theory on locally homogeneous spaces, K-Theory 4 (1991), 547-568.
9. (with J. Fox) K-theory and the spectrum of discrete subgroups of $Spin(4,1)$, Operator Algebras and Topology, W. B. Arveson, A. S. Mishchenko, M. Putinar, M. A. Rieffel, and S. Stratila, eds., Pitman Res. Notes in Math. vol. 270, Longman Scientific and Technical, Harlow, England, 1992, pp. 30-44.
10. (with J. Fox) K-amenability for $SU(n,1)$, J. Functional Analysis 117 (1993), 274-307.
11. (with J. Fox) Hodge decompositions and Dolbeault complexes on normal surfaces, Trans. Amer. Math. Soc. 343 (1994), 765-778.
12. (with J. Fox) The index of transversally elliptic operators for locally free actions, Pacific J. Math. 164 (1994), 41-85.
13. (with J. Fox) The index of transversally elliptic operators on locally homogeneous spaces of finite volume, Michigan Math. J. 41 (1994), 323-336.
14. (with J. Fox) Index theory for perturbed Dirac operators on manifolds with conical singularities, Proc. Amer. Math. Soc. 123 (1995), 2265-2273.
15. (with J. Fox) Comparison of perturbed Dirac operators, Proc. Amer. Math. Soc. 124 (1996), 1601-1608.
16. (with J. Fox) K homology and regular singular Dirac-Schrödinger operators on even-dimensional manifolds, Pacific J. Math. 180 (1997), 251-272.
17. (with J. Fox) Index theory of perturbed Dolbeault operators: smooth polar divisors, International J. Math. 11 (2000), 201-213.

18. (with J. Fox) Perturbed Dolbeault operators and the homology Todd class, Proceedings of the Amer. Math. Soc. 128 (2000), 3715-3721.
19. (with J. Fox and C. Gajdzinski) Homology Chern characters of perturbed Dirac operators, Houston J. Math. 27 (2001), 97-121.
20. (with J. Fox) Heat kernels for perturbed Dirac operators on even-dimensional manifolds with bounded geometry, International J. Math. 14 (2003), 69-104.
21. (with J. Fox) The Atiyah-Patodi-Singer theorem for perturbed Dirac operators on even-dimensional manifolds with bounded geometry, New York J. Math. 11 (2005), 303-332.
22. (with C. Wahl) K-homology classes of Dirac operators on smooth subsets of singular spaces, Rocky Mtn. J. Math. 39 (2009), 1245-1265.

EDITED

J. Fox and P. Haskell, editors, Index Theory and Operator Algebras, Contemp. Math. vol. 148, Amer. Math. Soc., Providence, RI, 1993.

ORGANIZED

Special Session on Geometry, Topology, and Analysis on Noncompact Manifolds of the 908th meeting of the American Mathematical Society, Orlando, FL, January 12-13, 1996.

INVITED ADDRESSES

1. Index theory of curves. 20-minute address delivered to the Special Session on Topology of Algebraic and Analytic Varieties of the 797th meeting of the American Mathematical Society, University of Maryland, College Park, MD, October 31, 1982.
2. Index of the $\bar{\partial}$ -operator on singular curves. Colloquium at the University of Georgia, Athens, GA, September 29, 1983.
3. The Baum-Connes conjecture for Abelian groups. Colloquium at IUPUI, Indianapolis, IN, November 28, 1983.
4. Direct limits in geometric K-theory. 20-minute address delivered to the Special Session on C^* -Algebras and Topology/Geometry of the 812th meeting of the American Mathematical Society, Plymouth State College, Plymouth, N.H., July 1, 1984.
5. A conjecture of Connes and Kasparov concerning certain C^* Algebras. Wabash Functional Analysis Seminar, Crawfordsville, IN, December 7, 1985.
6. Kasparov products and the Connes-Kasparov conjecture. 20-minute address delivered to the Special Session on Index Theory and its Applications of the 826th meeting of the American

- Mathematical Society, IUPUI, Indianapolis, IN, April 11, 1986.
7. Cyclic cocycles associated to elliptic operators on some noncompact manifolds. 30-minute address delivered to Special Session on Cyclic Homology and Applications of the 833rd meeting of the American Mathematical Society, Kent State University, Kent, OH, April 4, 1987.
 8. Index theory for manifolds, singular spaces, and operator algebras. Colloquium at the University of Colorado, Boulder, CO, February 1, 1988.
 9. Structure of equivariant KK cycles. 20-minute address delivered to the Special Session on Operator Algebras and Geometry of the 847th meeting of the American Mathematical Society, Phoenix, AZ, January 12, 1989.
 10. Applications of equivariant Kasparov theory. 20-minute address delivered to the Special Session on Operator Algebras, Galois Theory and Representations of the 848th meeting of the American Mathematical Society, College of the Holy Cross, Worcester, MA, April 16, 1989.
 11. The role of operator algebras in index theory. Father Case colloquium at St. Louis University, St. Louis, MO, April 27, 1989.
 12. Geometry and analysis on singular varieties. 20-minute address delivered to the Special Session on Geometric Spectral and Inverse Spectral Problems of the 854th meeting of the American Mathematical Society, Louisville, KY, January 17, 1990.
 13. Index theory and representations of Lie groups. Colloquium at IUPUI, Indianapolis, IN, February 23, 1990.
 14. Index theory on homogeneous spaces. 40-minute address delivered to the Special Session on Differential Geometry of the 856th meeting of the American Mathematical Society, Fayetteville, AR, March 24, 1990.
 15. Index theory for locally free actions of Lie groups. 40-minute address delivered to the OSU Quantized Geometry Conference, Ohio State University, Columbus, OH, May 26, 1991.
 16. Elliptic operators and Lie group representations. 50-minute address delivered to the CBMS Regional Conference on K-Homology and Index Theory, University of Colorado, Boulder, CO, August 6, 1991.
 17. L^2 index theorems for certain transversally elliptic operators. 20-minute address delivered to the Special Session on Index Theory of the 871st meeting of the American Mathematical Society, Baltimore, MD, January 8, 1992.
 18. KK theory and Lie groups. 20-minute address delivered to the Special Session on C^* -Algebras and Algebraic Topology of the 873rd meeting of the American Mathematical Society, Southwest Missouri State University, Springfield, MO, March 21, 1992.
 19. Fredholm operators on open manifolds. 20-minute address delivered to the Special Session on

- Noncommutative Differential Geometry of the 886th meeting of the American Mathematical Society, Texas A&M University, College Station, TX, October 23, 1993.
20. Regular singular perturbed Dirac operators. 20-minute address delivered to the Special Session on Geometric Applications of Operator Algebras and Index Theory of the 889th meeting of the American Mathematical Society, Cincinnati, OH, January 13, 1994.
 21. Dirac-Schrödinger operators and index theory. Colloquium at the University of Colorado, Boulder, CO, March 13, 1995.
 22. K homology and the geometry of singular spaces. hour address delivered to Perspectives in K-Homology, University of Colorado, Boulder, CO, July 18, 1996.
 23. Perturbed Dolbeault operators. 20-minute address delivered to the Special Session on Noncommutative Geometry and Applications of the 918th meeting (103rd annual meeting) of the American Mathematical Society, Dan Diego, CA, January 8, 1997.
 24. Perturbed Dirac operators. 30-minute address delivered to the Special Session on C*-Algebraic Methods in Geometry and Topology of the 937th meeting of the American Mathematical Society, Pennsylvania State University, State College, PA, October 25, 1998.
 25. Self-adjoint perturbed Dirac operators. 40-minute address delivered to the Special Session on Operator K-Theory and its Applications to Geometry and Topology of the 947th meeting of the American Mathematical Society, Providence College, Providence, RI, October 2, 1999.
 26. Topology, geometry, and analysis: An introduction to the Hodge conjecture. Colloquium at the University of Richmond, Richmond, VA, March 26, 2001.
 27. Heat kernels for perturbed Dirac operators. 20-minute address delivered to the Special Session on Operator Algebras and Their Applications of the 985th meeting of the American Mathematical Society, Indiana University, Bloomington, IN, April 6, 2003.
 28. Heat kernels for perturbed Dirac operators. 30-minute address delivered to The Clay Mathematics Institute International Conference and Spring School on Noncommutative Geometry and Applications, Vanderbilt University, Nashville, TN, May 5, 2003.
 29. Toeplitz operators on singular spaces. 20-minute address delivered to the Special Session on Topology, Representation Theory, and Operator Algebras (A Tribute to Paul Baum) of the 1125th meeting (123rd annual meeting) of the American Mathematical Society, Atlanta, GA, January 4, 2017.
 30. Singular space invariants at the interface of analysis and topology. 45-minute address delivered online at the Third Meeting on Topology and Related Topics of the Facultad de Ciencias Matemáticas, Universidad Nacional Mayor de San Marcos, Lima, Peru, October 29, 2020.

PH.D. STUDENTS

Cezary Gajdzinski (1994) L^2 -indices for perturbed Dirac operators on odd dimensional open complete manifolds.

Kristine Roinestad (2010) Geometry of fractal squares

Bartleby Ordonez-Delgado (2010) An embedded Toeplitz problem

Jessica StClair (2011) Geometry of spaces of planar quadrilaterals

Rachel Arnold (2012) The discrete Hodge star operator and Poincaré duality

M.S. THESIS STUDENTS

Jesse Taylor (1994) An application of signature of smooth manifolds

Constantin Dorin Dumitraşcu (1995) The odd chern character and obstruction theory

Eric Lengyel (1996) Hyperreal structures arising from an infinite base algorithm

Molly Ison (2005) Two aspects of topology in graph configuration spaces

Erin Kelly (2006) The expanding constant, Ramanujan graphs, and Winnie Li graphs

Bartleby Ordonez-Delgado (2006) Algebras of Toeplitz operators

David Murrugarra Tomairo (2007) Bott periodicity

Kristine Roinestad (2007) Geometry of self-similar sets

Rachel Arnold (2008) Complex analysis on planar cell complexes

Bei Jia (2013) D-branes and K-homology