

Christopher Kottke

New College of Florida
Mathematics, Division of Natural Sciences
5800 Bay Shore Rd.
Sarasota, FL, 34243 USA

ckottke@ncf.edu
<http://ckottke.ncf.edu/>
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Education and Appointments

- 2016– Assistant Professor, New College of Florida
- 2013–2016 Research Instructor, Northeastern University
- 2010–2013 Tamarkin Assistant Professor, Brown University
- 2010 Ph.D. Mathematics, Massachusetts Institute of Technology
 Thesis: *Index theorems and magnetic monopoles on asymptotically conic manifolds*
- 2004 B.A. Mathematics, B.A. Physics, Tufts University.

Publications and Preprints

1. Partial compactification of monopoles and metric asymptotics. (With M. Singer).
[arXiv:1512.02979](https://arxiv.org/abs/1512.02979), (2015), 113 pages.
2. Blow-up in manifolds with generalized corners.
International Mathematical Research Notices, in press.
[arXiv:1509.03874](https://arxiv.org/abs/1509.03874), (2015), 33 pages.
3. Equivalence of string and fusion loop-spin structures. (With R. Melrose).
[arXiv:1309.0210](https://arxiv.org/abs/1309.0210), (2013), 48 pages.
4. Dimension of monopoles on asymptotically conic 3-manifolds.
Bulletin of the LMS, vol. 45, no. 5, (2015), pp. 818–834.
[arXiv:1310.2974](https://arxiv.org/abs/1310.2974).
5. Loop-fusion cohomology and transgression. (With R. Melrose).
Mathematical Research Letters, vol. 22, no. 4, (2015), pp. 1177–1192.
[arXiv:1309.7674](https://arxiv.org/abs/1309.7674).
6. A Callias-type index theorem with degenerate potentials.
Communications in PDE, vol. 40, no. 2, (2015), pp. 219–264.
[arXiv:1210.3275](https://arxiv.org/abs/1210.3275).
7. Generalized blow-up of corners and fiber products. (With R. Melrose).
Transactions of the AMS, vol. 367, no. 1, (2015), pp. 651–705.
[arXiv:1107.3320](https://arxiv.org/abs/1107.3320).
8. An index theorem of Callias type for pseudodifferential operators.
Journal of K-Theory, vol. 8, no. 3, (2011), pp. 387–417.
[arXiv:0909.5661](https://arxiv.org/abs/0909.5661).
9. Accurate finite-difference and time-domain simulation of anisotropic media by subpixel smoothing.
(With A.F. Oskooi and S. Johnson).
Optics Letters, vol. 34, no. 18, (2009), pp. 2778–2780.

10. Perturbation theory for anisotropic dielectric interfaces, and application to sub-pixel smoothing of discretized numerical methods. (With A.F. Oskooi and S. Johnson).
Physical Review E, vol. 77, no. 3, (2008), pp. 6611–6621.
11. Vortex core identification in viscous hydrodynamics. (With L. Finn and B. Boghosian).
Philosophical Transactions of the Royal Society A, vol. 386, no. 1833, (2005), pp. 1937–1948.

Academic Honors and Awards

- 2011–2012 AMS-Simons Postdoctoral Travel Grant.
2009 Charles and Holly Housman Award for Excellence in Undergraduate Teaching, MIT.
2005 Presidential Fellowship, MIT.
2000–2004 National Merit Scholarship, Tufts University.

Academic Talks

Invited Talks: Conferences and Workshops

- 2017 Aug The analysis of gauge-theoretic moduli spaces, BIRS.
 Jun Analysis and topology in interaction, Cortona, Italy.
2016 Dec Geometric and spectral methods in PDE, BIRS Oaxaca.
2015 Dec Analysis on singular manifolds, CMS Winter Meeting, Montreal.
 Jul–Aug Metric and analytic aspects of moduli spaces, visiting fellow, Newton Institute.
2014 Nov Geometric scattering theory and applications, BIRS.
 Jul String geometry and loop spaces, Greifswald University.
 Jun Analysis and topology in interaction, Cortona, Italy.
2013 Oct Geometric and spectral analysis, AMS Sectional, Temple University.
 Mar Geometric and singular analysis, Potsdam University.
2012 Jun Spectral invariants on singular and non-compact spaces, CRM.
 May Analysis and geometric singularities, Oberwolfach.
 Apr Spring lecture series, University of Arkansas.
2011 Jun Microlocal methods in mathematical physics and global analysis, Universität Tübingen.
2010 Aug Topics in spectral and scattering theory, Penn State University.
 Jun Talbot workshop on loop groups and twisted K-theory, Breckenridge, CO.
2009 Oct Microlocal analysis and spectral theory on singular spaces, AMS Sectional, Penn State.
 Apr Singularities at MIT.
2008 Aug Second symposium on spectral and scattering theory, Federal University of Pernambuco.

Invited Talks: Seminars

- 2017 Jan University of Waterloo.
2016 Oct MIT.
 Mar Duke University.
2015 Oct Stanford University.
 Sep MIT.
 Jan Boston University.
2014 Dec Purdue University.
 Apr Boston University.
 Mar Worldwide Center of Mathematics.
2013 Nov University of Montreal.

	Sep	Northeastern University.
	May	University College London.
	Mar	Boston University.
2012	Mar	Purdue University.
2011	Oct	University of Illinois at Urbana-Champaign.
	Mar	Temple University.
	Mar	Northeastern University.
2009	Dec	Brown University.

Other Conferences Attended

2016	Jun	Geometry and topology of stratified spaces, CIRM.
2013	May	Control, index, traces and determinants, Conference for Jean-Michel Bismut, Orsay.
2011	Oct	Microlocal methods in spectral and scattering theory, Northwestern University.
	Jan	Geometric analysis, CIRM.
2010	Mar	Geometric scattering theory and applications, BIRS.
2009	Jul	Spectral theory and geometric analysis, Northeastern University.
2008	Jun	Geometric applications of microlocal analysis, CIRM.

Teaching Experience

New College of Florida

Complex Analysis, Spring 2017.
 Advanced Linear Algebra, Spring 2017.
 Functional Analysis, Fall 2016.
 Multivariable Calculus, Fall 2016.
 Tutorial: Differential Topology and Geometry, Fall 2016.
 Tutorial: Putnam exam preparation, Fall 2016.

Northeastern University

Graduate Topics in Differential Geometry, Spring 2016.
 Multivariable Calculus, Fall 2015, Spring 2015, Spring 2014.
 Real Analysis, Fall 2015, Fall 2014, Fall 2013.
 Undergraduate Directed Study: Differential Topology, Spring 2014.

Brown University

Abstract Algebra, Spring 2013.
 Differential Equations and Nonlinear Dynamics, Fall 2012.
 Graduate Algebraic Topology II, Spring 2012.
 Introduction to Mathematical Cryptography, Fall 2011.
 Intermediate Calculus, Fall 2011.
 Honors Linear Algebra, Spring 2013, Spring 2011.
 Honors Vector Calculus, Fall 2010.

Massachusetts Institute of Technology

Differential Equations (TA), Spring 2010, Spring 2009, Spring 2007.
 Multivariable Calculus (TA), January 2010, January 2009, January 2008.

Professional and Academic Service

Reviewer: *Advances in Mathematics*, Springer Graduate Texts, *Communications in PDE*, *American Mathematical Monthly*.

Conference Organizer: *The Sen Conjecture and Beyond*, University College London, June 2017.

Putnam exam supervisor: Northeastern University, Fall 2015.

Seminar Organizer: Brown University Geometry and Topology Seminar, 2011–2013.

Freshman Advisor: Brown University, 2010–2013.