



## Andras Vasy

Robert Grimmett Professor in Mathematics

 Curriculum Vitae available Online

### Bio

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#### ACADEMIC APPOINTMENTS

- Professor, Mathematics
- Member, Institute for Computational and Mathematical Engineering (ICME)

#### ADMINISTRATIVE APPOINTMENTS

- Professor, Department of Mathematics, Stanford University, (2008- present)
- Associate Professor, Department of Mathematics, Stanford University, (2005-2008)
- Visiting Associate Professor, Department of Mathematics, Northwestern University, (2004-2005)
- Associate Professor, Department of Mathematics, Massachusetts Institute of Technology, (2003-2006)
- Enseignant invité, Département de Mathématiques, Université de Nantes, (2002-2002)
- Local organizer, Programme in Scattering Theory, Erwin Schrödinger Institute, Vienna, Austria, (2001-2001)
- Assistant Professor, Department of Mathematics, Massachusetts Institute of Technology, (1999-2003)
- Morrey Assistant Professor, Department of Mathematics, University of California, Berkeley, (1997-2000)
- Teaching Assistant, Department of Mathematics, Massachusetts Institute of Technology, (1993-1996)
- Alfred P. Sloan Research Fellowship, Alfred P. Sloan Foundation, (2002-2004)
- Alfred P. Sloan Doctoral Dissertation Fellowship, Alfred P. Sloan Foundation, (1996-1997)
- Clay Research Fellowship, Clay Mathematics Institute, (2004-2006)
- Chambers Fellowship, Stanford University, (2008-2009)

#### HONORS AND AWARDS

- Invited speaker for the Partial Differential Equations section, International Congress of Mathematicians, Seoul (2014)
- Jennifer C. Johnson prize for the best research paper, Department of Mathematics of Massachusetts Institute of Technology (1997)

#### BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Co-organizer, Programme on the 'Modern Theory of Wave Equations', Erwin Schrödinger Institute, Vienna, Austria
- Co-organizer, 'A conference on Inverse Problems in honor of Gunther Uhlmann', University of California, Irvine (2012 - 2012)
- Co-organizer, conference 'Microlocal methods in spectral and scattering theory', Northwestern University (2011 - 2011)
- Co-organizer, conference 'Microlocal methods in mathematical physics and global analysis', Tübingen, Germany (2011 - 2011)
- Co-organizer, conference 'From wave propagation to K-theory', Stanford University (2008 - 2008)
- Co-organizer, semester-long Program on Analysis of Singular Spaces, Mathematical Sciences Research Institute, Berkeley, CA (2008 - 2008)

- Co-organizer, conference on Spectral Theory and Global Analysis, University of Oldenburg, Germany (2006 - 2006)
- Co-organizer, Scattering Theory and Singular Spaces, Northwestern University (2005 - 2005)
- Co-organizer, conference on Scattering Theory and Singular Spaces, Northwestern University (2005 - 2005)
- Co-organizer, Geometric Analysis: a conference in Honor of Richard Melrose, Massachusetts Institute of Technology (2002 - 2002)
- Local organizer, semester-long Programme in Scattering Theory, Erwin Schrödinger Institute, Vienna, Austria (2001 - 2001)
- Member, Graduate Admissions Committee, Stanford University, Department of Mathematics (2013)
- Member, Natural Sciences Curriculum Review Committee, Stanford University, School of Humanities and Sciences (2012 - 2013)
- Member, Appointments Committee, Stanford University, Department of Mathematics (2011 - 2013)
- Member, Director of Graduate Studies, Stanford University, Department of Mathematics (2007 - 2010)
- Member, Graduate Admissions Committee, Stanford University, Department of Mathematics (2006 - 2006)
- Member, Graduate Admissions Committee, Stanford University, Department of Mathematics (2007 - 2007)
- Editor, Analysis & PDE (journal) (2007 - present)

## PROFESSIONAL EDUCATION

- Ph.D., Massachusetts Institute of Technology , Mathematics (1997)
- M.S., Stanford University , Mathematics (1993)
- B.S., Stanford University , Physics (1993)

## Teaching

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### COURSES

#### 2019-20

- Elementary Functional Analysis: MATH 175 (Win)
- Real Analysis: MATH 205B (Win)
- Real Analysis: MATH 205C (Spr)

#### 2018-19

- Ordinary Differential Equations with Linear Algebra: MATH 53 (Win)
- Partial Differential Equations of Applied Mathematics: CME 303, MATH 220 (Aut)
- Proofs and Modern Mathematics: MATH 83N (Aut)

#### 2016-17

- Modern Mathematics: Continuous Methods: MATH 61CM (Aut)
- Real Analysis: MATH 205C (Spr)

## STANFORD ADVISEES

### Postdoctoral Faculty Sponsor

Jeff Galkowski, Oliver Lindblad Petersen

### Doctoral Dissertation Advisor (AC)

Evangelie Zachos, Beite Zhu, Joey Zou

### Doctoral Dissertation Co-Advisor (AC)

Rahul Sarkar

## Publications

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### PUBLICATIONS

- **Morawetz estimates for the wave equation at low frequency** *MATHEMATISCHE ANNALEN*  
Vasy, A., Wunsch, J.  
2013; 355 (4): 1221-1254
- **MULTISCALE DISCRETE APPROXIMATIONS OF FOURIER INTEGRAL OPERATORS ASSOCIATED WITH CANONICAL TRANSFORMATIONS AND CAUSTICS** *MULTISCALE MODELING & SIMULATION*  
de Hoop, M. V., Uhlmann, G., Vasy, A., Wendt, H.  
2013; 11 (2): 566-585
- **Diffraction of singularities for the wave equation on manifolds with corners** *Astérisque*  
Melrose, R., Wunsch, J., Vasy, A.  
2013; 351: 136
- **DIFFRACTION OF SINGULARITIES FOR THE WAVE EQUATION ON MANIFOLDS WITH CORNERS** *ASTERISQUE*  
Anonymous  
2013: 1-?
- **SEMICLASSICAL RESOLVENT ESTIMATES AT TRAPPED SETS** *ANNALES DE L INSTITUT FOURIER*  
Datchev, K., Vasy, A.  
2012; 62 (6): 2379-2384
- **Spectral theory for the Weil-Petersson Laplacian on the Riemann moduli space** *To appear in Commentarii Mathematici Helvetici*  
Ji, L., Mazzeo, R., Müller, W., Vasy, A.  
2012: 26
- **Microlocal analysis of asymptotically hyperbolic spaces and high energy resolvent estimates** *In Inverse problems and applications*  
Vasy, A.  
edited by Uhlmann, G.  
Cambridge University Press, MSRI Publications.2012: 31
- **Gluing Semiclassical Resolvent Estimates via Propagation of Singularities** *INTERNATIONAL MATHEMATICS RESEARCH NOTICES*  
Datchev, K., Vasy, A.  
2012: 5409-5443
- **PROPAGATION THROUGH TRAPPED SETS AND SEMICLASSICAL RESOLVENT ESTIMATES** *ANNALES DE L INSTITUT FOURIER*  
Datchev, K., Vasy, A.  
2012; 62 (6): 2347-2377
- **THE WAVE EQUATION ON ASYMPTOTICALLY ANTI DE SITTER SPACES** *ANALYSIS & PDE*  
Vasy, A.  
2012; 5 (1): 81-144
- **Positive commutators at the bottom of the spectrum** *JOURNAL OF FUNCTIONAL ANALYSIS*  
Vasy, A., Wunsch, J.  
2010; 259 (2): 503-523
- **The wave equation on asymptotically de Sitter-like spaces** *ADVANCES IN MATHEMATICS*  
Vasy, A.  
2010; 223 (1): 49-97
- **Diffraction at corners for the wave equation on differential forms** *Comm. in PDEs*  
Vasy, A.  
2010; 35: 1236-1275
- **Gluing semiclassical resolvent estimates, or the importance of being microlocal** *Oberwolfach Reports*  
Datchev, K., Vasy, A.

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2010; 7 (2): 1648-1651

- **SEMICLASSICAL SECOND MICROLOCAL PROPAGATION OF REGULARITY AND INTEGRABLE SYSTEMS** *JOURNAL D ANALYSE MATHEMATIQUE*  
Vasy, A., Wunsch, J.  
2009; 108: 119-157
- **Propagation of singularities for the wave equation on manifolds with corners** *ANNALS OF MATHEMATICS*  
Vasy, A.  
2008; 168 (3): 749-812
- **DIFFRACTION BY EDGES** *International Conference on Inversese Quantum Scattering Theory*  
Vasy, A.  
WORLD SCIENTIFIC PUBL CO PTE LTD.2008: 2287–2328
- **Propagation of singularities for the wave equation on edge manifolds** *DUKE MATHEMATICAL JOURNAL*  
Melrose, R., Vasy, A., Wunsch, J.  
2008; 144 (1): 109-193
- **Scattering for symbolic potentials of order zero and microlocal propagation near radial points** *Analysis & PDE*  
Hassell, A., Melrose, R., Vasy, A.  
2008; 1: 127-196
- **Scattering theory on  $SL(3)/SO(3)$ : Connections with quantum 3-body scattering** *PROCEEDINGS OF THE LONDON MATHEMATICAL SOCIETY*  
Mazzeo, R., Vasy, A.  
2007; 94: 545-593
- **Geometric optics and the wave equation on manifolds with corners** *Contemp. Math.*  
Vasy, A.  
2006; 412: 315-333
- **Analytic continuation of the resolvent of the Laplacian on symmetric spaces of noncompact type** *JOURNAL OF FUNCTIONAL ANALYSIS*  
Mazzeo, R., Vasy, A.  
2005; 228 (2): 311-368
- **Absence of super-exponentially decaying eigenfunctions on Riemannian manifolds with pinched negative curvature** *MATHEMATICAL RESEARCH LETTERS*  
Vasy, A., Wunsch, J.  
2005; 12 (5-6): 673-684
- **Lipschitz domains, domains with corners, and the Hodge Laplacian** *COMMUNICATIONS IN PARTIAL DIFFERENTIAL EQUATIONS*  
Taylor, M., Mitrea, M., Vasy, A.  
2005; 30 (10): 1445-1462
- **Analytic continuation of the resolvent of the Laplacian on  $SL(3)/SO(3)$**  *AMERICAN JOURNAL OF MATHEMATICS*  
Mazzeo, R., Vasy, A.  
2004; 126 (4): 821-844
- **Inverse scattering with fixed energy for dilation-analytic potentials** *INVERSE PROBLEMS*  
Vasy, A., Wang, X. P.  
2004; 20 (4): 1349-1354
- **Complex powers and non-compact manifolds** *COMMUNICATIONS IN PARTIAL DIFFERENTIAL EQUATIONS*  
Ammann, B., Lauter, R., Nistor, V., Vasy, A.  
2004; 29 (5-6): 671-705
- **Exponential decay of eigenfunctions in many-body type scattering with second-order perturbations** *JOURNAL OF FUNCTIONAL ANALYSIS*  
Vasy, A.  
2004; 209 (2): 468-492
- **Spectral and scattering theory for symbolic potentials of order zero** *ADVANCES IN MATHEMATICS*

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- Hassell, A., Melrose, R., Vasy, A.  
2004; 181 (1): 1-87
- **Inverse problems in N-body scattering** *Inverse Problems and Spectral Theory*  
Uhlmann, G., Vasy, A.  
edited by Isozaki, H.  
2004
  - **Geometry and analysis in many-body scattering. Inside-out: Inverse problems** *Math. Sci. Res. Inst. Publ*  
Vasy, A.  
2003; 47: 333-379
  - **Low-energy inverse problems in three-body scattering** *INVERSE PROBLEMS*  
Uhlmann, G., Vasy, A.  
2002; 18 (3): 719-736
  - **Resolvents and Martin boundaries of product spaces** *GEOMETRIC AND FUNCTIONAL ANALYSIS*  
Mazzeo, R., Vasy, A.  
2002; 12 (5): 1018-1079
  - **Smoothness and high energy asymptotics of the spectral shift function in many-body scattering** *COMMUNICATIONS IN PARTIAL DIFFERENTIAL EQUATIONS*  
Vasy, A., Wang, X. P.  
2002; 27 (11-12): 2139-2186
  - **Fixed energy inverse problem for exponentially decaying potentials** *Methods Appl. Anal*  
Uhlmann, G., Vasy, A.  
2002; 9: 239-248
  - **Propagation of singularities in many-body scattering in the presence of bound states** *JOURNAL OF FUNCTIONAL ANALYSIS*  
Vasy, A.  
2001; 184 (1): 177-272
  - **Intersecting Legendrians and blow-ups** *MATHEMATICAL RESEARCH LETTERS*  
Hassell, A., Vasy, A.  
2001; 8 (4): 413-428
  - **Propagation of singularities in many-body scattering** *ANNALES SCIENTIFIQUES DE L ECOLE NORMALE SUPERIEURE*  
Vasy, A.  
2001; 34 (3): 313-402
  - **The resolvent for Laplace-type operators on asymptotically conic spaces** *ANNALES DE L INSTITUT FOURIER*  
Hassell, A., Vasy, A.  
2001; 51 (5): 1299-?
  - **Symbolic functional calculus and N-body resolvent estimates** *JOURNAL OF FUNCTIONAL ANALYSIS*  
Hassell, A., Vasy, A.  
2000; 173 (2): 257-283
  - **Semiclassical estimates in asymptotically Euclidean scattering** *COMMUNICATIONS IN MATHEMATICAL PHYSICS*  
Vasy, A., Zworski, M.  
2000; 212 (1): 205-217
  - **Propagation of singularities in three-body scattering** *Asterisque*  
Vasy, A.  
2000; 262
  - **Propagation of singularities in three-body scattering** *ASTERISQUE*  
Vasy, A.  
2000: III-?

- **Scattering matrices in many-body scattering** *COMMUNICATIONS IN MATHEMATICAL PHYSICS*  
Vasy, A.  
1999; 200 (1): 105-124
- **The spectral projections and the resolvent for scattering metrics** *JOURNAL D ANALYSE MATHEMATIQUE*  
Hassell, A., Vasy, A.  
1999; 79: 241-298
- **Geometric scattering theory for long-range potentials and metrics** *INTERNATIONAL MATHEMATICS RESEARCH NOTICES*  
Vasy, A.  
1998: 285-315
- **Structure of the resolvent for three-body potentials** *DUKE MATHEMATICAL JOURNAL*  
Vasy, A.  
1997; 90 (2): 379-434
- **Asymptotic behavior of generalized eigenfunctions in N-body scattering** *JOURNAL OF FUNCTIONAL ANALYSIS*  
Vasy, A.  
1997; 148 (1): 170-184
- **Scattering poles for negative potentials** *COMMUNICATIONS IN PARTIAL DIFFERENTIAL EQUATIONS*  
Vasy, A.  
1997; 22 (1-2): 185-194