Contact Details

Address:	Mathematical Sciences Institute
	John Dedman Building
	Australian National University
	ACT 2601
Phone:	+61 2 6125 4980
Email:	melissa.tacy@anu.edu.au
Webpage	`https://maths-people.anu.edu.au/~tacy`

Employment

Australian National University	Research Fellow: 01-Sep-2016–
University of Adelaide	Lecturer: 01-Jan-2014–31-Jul-2016
Northwestern University	Boas Assistant Professor: 01-Sep-2011–31-Dec-2013
Institute for Advanced Study	Postdoctoral Member: 20-Sep-2010–05-Aug-2011
Australian National University	Research Assistant: 22-Mar-2010 –27-Aug-2010

Education

Doctor of Philosophy	'Semiclassical L^p estimates for quasimodes on submanifolds' Australian National University 2010, Advisor: Andrew Hassell
Bachelor of Philosophy	Completed with First Class Honours in Mathematics Australian National University 2005

Articles

- X. Han and **M. Tacy** (appendix by J. Galkowski), Sharp norm estimates of layer potentials and operators at high frequency, *Journal of Functional Analysis*, 269(9):2890-2926, 2015
- A. Hassell and **M. Tacy**, Improvement of eigenfunction estimates on manifolds of nonpositive curvature, *Forum Mathematicum*, 27(3):1435-1451, 2015
- A. Hassell and **M. Tacy**, Semiclassical L^p estimates of quasimodes on hypersurfaces with glancing flow, *Journal of Geometric Analysis*, 22(1):74-89, 2012,
- **M. Tacy**, Semiclassical L^p estimates of quasimodes on submanifolds, *Communications in Partial Differential Equations*, 35(8):1538-1562, 2010,
- **M Tacy**, Strichartz estimates for non-unitary energy bounds and eigenfunction estimates, *Proceedings of the 9th International Conference on Mathematical and Numerical Aspects of Waves Propagation*, 222-223, 2009

Preprints

- X. Han, **M. Tacy**, Equidistribution of random waves on small balls, *arXiv1611.05983* 2016
- **M. Tacy**, The quantisation of normal velocity does not concentrate on hypersurfaces, *arXiv1403.6575v2*, 2016
- **M. Tacy**, A note on constructing sharp examples for L^p norms of eigenfunctions and quasimodes near submanifolds, *arXiv:1605.03698*, 2016
- A. Barnett, A. Hassell, **M. Tacy** Comparable upper and lower bounds for boundary values of Neumann eigenfunctions and tight inclusion of eigenvalues, *arXiv1512.04165*
- Z. Guo, X. Han, **M. Tacy** , L^p bilinear quasimode esimates,*arXiv:1503.00413*, 2015

Recent Invited Talks

- Applications of semiclassical analysis in PDE
  - Department Colloquium, Macquarie University, 21 October 2016
- Quantisation and localisation of dynamical observables
  - Analysis seminar, University of Wollongong, 27 September 2016
  - Analysis and PDE seminar, Unviersity of Sydney, 26 September 2016
  - Analysis seminar, Monash University, 7 June 2016
- Bilinear L^p estimates for quasimodes
  - Recent Trends in Nonlinear Evolution Equations, 4-5 November 2015
  - Analysis seminar, Chalmers University of Technology, 21 July 2015
  - Pure maths seminar, University of Melbourne, 24 April 2015
- "A semiclassical approach to eigenfunctions"
  - A 5 lecture series given as part of the Fourth Summer School on Quantum Ergodicity and Harmonic Analysis, Marburg, 7-10 July 2015

Teaching Experience

University of Adelaide

Semester 1 2016

- Complex Analysis: 25 students from third year and honours level.

Semester 2 2015

- Calculus IA: 2 sections of 150-200 students at a introductory first year level.

Semester 1 2015

- Complex Analysis: 25 students from third year and honours level.
- Mathematics Background for Biostatistics (online): 70 masters students from a range of university, the mathematics in this course was at an introductory first year level.

Semester 2 2014

- Calculus IA: 2 sections of 150-200 students at first year level.

Semester 1 2014

- Complex Analysis III: 25 students from third year and honours level.

Northwestern University

Fall 2013

- Integral Calculus of Single Variable Functions: 2 sections of 30-40 students at introductory first year level.

Winter 2013

- Multiple Integral and Vector Calculus: 2 sections of 30-40 students at advanced first year level

Fall 2012

- Multivariable Differential Calculus: 2 sections of 30-40 students at advanced first year level

Spring 2012

- Integral Calculus of Single Variable Functions: 30-40 students at introductory first year level.

Winter 2012

- Integral Calculus of Single Variable Functions: 30-40 students at introductory first year level.

Fall 2011

- Fourier Analysis and Boundary Value Problems for the Integrated Science Program: 30 students at an advanced second year level
- Integral Calculus of Single Variable Functions: 30-40 students at introductory first year level.

Australian National University

Semester 1 and 2 2009

- Basic Maths for STAT'

  ANU preparatory course for continuing education students aimed at preparing mature age students for the Special Tertiary Admissions Test (STAT). There were approximately 20 students each semester.

Awards and Scholarships

- Cheryl E. Praeger Travel Award (2015)
- AMS Simons travel grant (2013)
- Association for Women in Mathematics Travel Grant (2012)
- Honourable Mention from the B.H Neumann Student Prize Committee for the talk 'Flow Glancing and Hypersurface Eigenfunction Estimates' at the Annual Meeting of the Australian Mathematical Society (2009)
- Postgraduate Fulbright Award (2007-2008)

Outreach Activities

- Member of the Outreach Committee for the School of Mathematics 2015
- Participated in Mathematicians in Schools 2015
- Participated in University of Adelaide's women in mathematics workshop 2014 and 2015
- Lectured at Northwestern's undergraduate summer conference on quantization in mathematics 2012
- Participated in Northwestern's "Take your daughters and sons to work day" in 2012 and 2013.
- Participant in Scientists in Schools 2009.
- Worked with Scientists in Schools in 2009 to help launch their sub-program Mathematicians in Schools.
- Completed a Graduate Course in Science Communication ANU 2006

Committee Service

- School of Mathematics Outreach Committee 2015
- Early Career Member on the National Committee for Mathematical Sciences 2014-
- Organiser for the Mathematical Conversations Series IAS 2011

Conference Organising

- The Australia-Japan workshop on Geometry, Analysis and their Applications October 2015
- Session organiser for the Harmonic Analysis/PDE special session at AustMS 2015

Memberships

- Australian Mathematical Society