

Daniel Mathews

Curriculum Vitæ

Personal Information

Address: Stanford University
Department of Mathematics
Building 380, Sloan Hall
Stanford, California 94305

Phone: +1 (650) 796-6460 (cell)

Email: mathews@math.stanford.edu

Web: <http://math.stanford.edu/~mathews/>

Date of birth: 26 November 1979

Place of birth: Melbourne, Australia

Citizenship: Australian

Education

- **Stanford University**, Stanford, California.
Ph.D. in Mathematics, 2009 (expected).
Advisor: Yakov Eliashberg
- **University of Melbourne**, Melbourne, Australia.
M.Sc. in Mathematics, 2004.
Thesis: *From Algebra to Geometry: A Hyperbolic Odyssey — The construction of geometric cone-manifold structures with prescribed holonomy.*
Supervisor: Craig Hodgson
- **University of Melbourne**, Melbourne, Australia.
B.Sc. (Hons) in Mathematics, L.L.B. (Hons), Dip.Mod.Lang. (Italian)
Thesis: *Mahler's Unfinished Symphony: Études in Knots, Algebra and Geometry.*
Supervisor: Craig Hodgson

Research

Interests:

- Three-dimensional contact topology: Combinatorial aspects (e.g. convex surfaces, open books), analytic aspects (involving holomorphic curves).
- Relationship between contact geometry and Heegaard Floer, sutured Floer homology theories.
- Contact homology theories for 3-manifolds with boundary.

Preprint:

- *Chord diagrams, topological quantum field theory, and the sutured Floer homology of solid tori.* <http://arxiv.org/abs/0903.1453>

Talks:

- Symplectic progress seminar, November 2008: *Catalan numbers and sutured Floer homology*.
- Manifolds at Melbourne conference, January 2006: *Construction of geometric cone-manifold structures with prescribed holonomy*.
- Topology seminar, University of Melbourne, July 2005: *Construction of geometric cone-manifold structures with prescribed holonomy*.

Other publications:

- *Mathematical Olympiad Lectures* (in progress, joint with A. Di Pasquale and N. Do.)

Recreational articles:

- *A Beautiful Sequence*, Aust. M. S. Gazette, Vol. 31 No. 1 (2004)
- *Games with Galois*, Aust. M. S. Gazette, Vol. 31 No. 2 (2004)
- *Quadratic geography, algebraic extreme sports and magical Farey trees*, Aust. M. S. Gazette, Vol. 31 No. 3 (2004)
- *Knot Man* (comic; illustrator Priscilla Brown): 4 issues available, published in Paradox, the magazine of the Melbourne University Mathematics and Statistics Society.

Teaching Experience

At Stanford University:

2008 Course Assistant:

Math 215C, first year graduate topology. Responsible for grading homework and exams, holding office hours and giving some lectures.

2008 Teaching Assistant:

Math 51, linear algebra and multivariable calculus. Responsible for leading sections, holding office hours, and grading exams.

2007 Course Assistant:

Math 175, functional analysis. Responsible for grading homework and holding office hours.

2006 Teaching Assistant:

Math 41, calculus. Responsible for leading section, holding office hours, and grading exams.

2006 Course Assistant:

Math 116, complex analysis. Responsible for grading homework, holding office hours and giving some lectures.

2005 Teaching Assistant:

Math 51, linear algebra and multivariable calculus. Responsible for leading sections, holding office hours, and grading exams.

2005 Course Assistant:

Math 20, calculus. Responsible for grading and holding office hours.

2004 Course Assistant:

Math 120, group theory. Responsible for holding office hours, grading exams and writing homework solutions.

Summer camp:

- 2007 **Teaching Assistant at Stanford University Mathematics Camp (SUMaC):**
Responsible for meeting with several students individually every day to discuss their experiences at the camp and to explain mathematics.

Mathematical Olympiad:

- 2002–04 **Deputy Leader of Australian team at International Mathematics Olympiad:**
Glasgow 2002, Tokyo 2003, Athens 2004
- 1998–04 **Lecturer, tutor, grader, administrator:**
In residence at biannual 10-day residential camps biannually 1999–2004.
At IMO training camps and IMO 2002–2004.

Other teaching:

- Mentoring talented high-school students:
Scotch College 1998-2004; Penleigh & Essendon Grammar School 2001-2003
- Private tutoring.

Conferences Attended

- 08/08 **Workshop on Holomorphic Curves:**
Stanford University.
- 07/08 **Workshop on Symplectic Field Theory III:**
Humboldt University, Berlin.
- 07/07 **New Perspectives and Challenges in Symplectic Field Theory — a Conference in Honour of Yasha Eliashberg's 60th Birthday:**
Stanford University.
- 08/06 **Workshop on Symplectic Field Theory II:**
Universität Leipzig.
- 06/06 **IAS / Park City Mathematics Institute Summer Session:**
Park City, Utah.
- 03/06 **3-manifolds after Perelman:**
Heriot-Watt University, Edinburgh.
- 01/06 **Manifolds at Melbourne:**
University of Melbourne.
- 05/05 **3-manifolds and knot theory:**
University of Texas at Austin.

Awards

- 1999–03 Rowden White Prize 2002; Dean's Honours List 2000; JR Maguire Exhibition 1999 (highest ranked student in Criminal Law); Dean's Prize in Science 1998; Melbourne University Law Review 1999-2003.
- 1998–02 Melbourne University National Scholarship.
- 1997–8 First Place in the State in VCE (Victorian high school certificate) 1997. Australian Students Prize for Excellence 1997, 1998. Premier's prizes in mathematics, physics.

1996–7 Represented Australia at the International Mathematical Olympiad.
Mar del Plata, Argentina 1997 — silver medal.
Mumbai, India 1996 — bronze medal.

Other activities

2001– Australian Mathematical Olympiad Committee, Senior Problems Committee.
2001 President, Melbourne University Mathematics Society.

Other interests

- **Music:**
Stanford Wind Ensemble, 2005–07.
Victorian Youth Symphony Orchestra (self-managed amateur orchestra), 1998-2004:
secretary, webmaster, principal French Horn.
- **Human rights:**
Amnesty International, American Civil Liberties Union, Stanford Says No to War.
- **Miscellaneous:**
Physics, astronomy, world politics, international law, environmental policy, alternative economics, linguistics, music composition, philosophy, neuroscience, economic history, beer brewing.

References

- **Yakov Eliashberg** (Stanford University; Thesis Advisor):
eliash@math.stanford.edu
- **Steven Kerckhoff** (Stanford University):
spk@geom.stanford.edu
- **Eleny Ionel** (Stanford University):
ionel@math.stanford.edu
- **Mark Lucianovic** (Stanford University):
markl@math.stanford.edu