

# Summary of 2007 Research Activities

**The activities** of CMI researchers and research programs are sketched below. Researchers and programs are selected by the Scientific Advisory Board (see inside back cover).

## Clay Research Fellows

**Mohammed Abouzaid** began his five-year appointment in July 2007. He received his Ph.D. from the University of Chicago where he worked under the direction of Paul Seidel. Abouzaid is currently a postdoctoral fellow at MIT.

**Soren Galatius**, a native of Denmark, graduated from the University of Aarhus in 2004, where he worked under Ib Madsen. He is currently Assistant Professor of mathematics at Stanford University. He has a three-year appointment that began in September 2007.

**Davesh Maulik** recently completed his doctorate in mathematics at Princeton University. He began his five-year appointment in July 2007 at Columbia University.

**Teruyoshi Yoshida** is a graduate of Harvard University, where he is currently conducting his work in algebraic number theory as a member of the Society of Fellows. Yoshida began his three-year appointment in December 2007.

Abouzaid, Galatius, Maulik and Yoshida joined CMI's current group of research fellows Artur Avila (IMPA Brazil), Daniel Biss (University of Chicago), Maria Chudnovsky (Columbia University), Bo'az Klartag (Princeton University), Ciprian Manolescu (Columbia University), Maryam Mirzakhani (Princeton University), Sophie Morel (Institute for Advanced Study), Samuel Payne (Stanford University), and David Speyer (MIT).

## Research Scholars

**Mihalis Dafermos** (DPMMS, University of Cambridge). December 31, 2006–December 30, 2007 at University of Cambridge.

**Dipendra Prasad** (TIFR, Mumbai). September 24, 2007–June 13, 2008 at University of California, San Diego.



*Clay Research Fellow Mohammed Abouzaid*

**Andras Stipsicz** (Alfréd Rényi Institute of Mathematics, Budapest). September 1–December 31, 2007 at Columbia University.

## Senior Scholars

**Alex Eskin** (University of Chicago). August 20–December 14, 2007. MSRI Program on Teichmüller Theory and Kleinian Groups.

**Gerhard Huisken** (Max Planck Institute, Potsdam, Germany). March 12–22, 2007. MSRI Program on Geometric Evolution Equations.

**Peng Lu** (University of Oregon). January 8–March 30, 2007. MSRI Program on Geometric Evolution Equations.

**Andrei Okounkov** (Princeton University). July 1–21, 2007. PCMI Program on Statistical Mechanics.



*Clay Research Fellow Soren Galatius*

Gang Tian (Princeton University). January 1–March 31, 2007. MSRI Program on Geometric Evolution Equations.

Srinivasa Varadhan (Courant Institute at NYU). July 1–21, 2007. PCMI Program on Statistical Mechanics.

### Liftoff Fellows

CMI appointed seventeen Liftoff Fellows for the summer of 2007. Clay Liftoff Fellows are recent Ph.D. recipients who receive one month of summer salary and travel funds before their first academic position. See [www.claymath.org/liftoff](http://www.claymath.org/liftoff)

Dmitriy Boyarchenko	
Hans Christianson	Pavlo Pylyavskyy
Jason DeBlois	Shahab Shahibi
Adrian Ioana	Sug Woo Shin
Anthony Licata	Jeffrey Streets
Grace Lyo	Junecue Suh
Elizabeth Meckes	Joshua Sussan
Yi Ni	Ben Webster
Jeehoon Park	Josephine Yu

### Research Programs Organized and Supported by CMI

January, Spring Semester. Semester-Long Program in Symplectic Topology at MIT.

January 8–27. School and Workshop in the Geometry and Topology of Singularities in Cuernavaca, Mexico.

January 29–Feb 2. Diophantine and Analytic Problems in Number Theory Conference at Moscow Lomonosov University.

January 1–April 30. Homological Mirror Symmetry and Applications Conference at IAS.

March 5–9. Workshop on Hopf Algebras and Props at CMI.

March 18–21. Dynamics Workshop in Honor of Hillel Furstenberg at the University of Maryland.

March 15–16. Conference on Hilbert’s 10th Problem at CMI, including a preview screening of George Csicsery’s film on Julia Robinson at the Museum of Science, Boston.

March 19–23. Motives and Algebraic Cycles: A Conference dedicated to the Mathematical Heritage of Spencer J. Bloch at the Fields Institute.

April 2–7. Noncommutative Geometry at IHES, Bur-sur-Yvette.

April 16–20. Minimal and Canonical Models at MSRI in Berkeley, California.

April 20–22. Workshop on Symplectic Topology at CMI.

April 29–May 5. Advances in Algebra and Geometry Conference at MSRI in Berkeley, California.

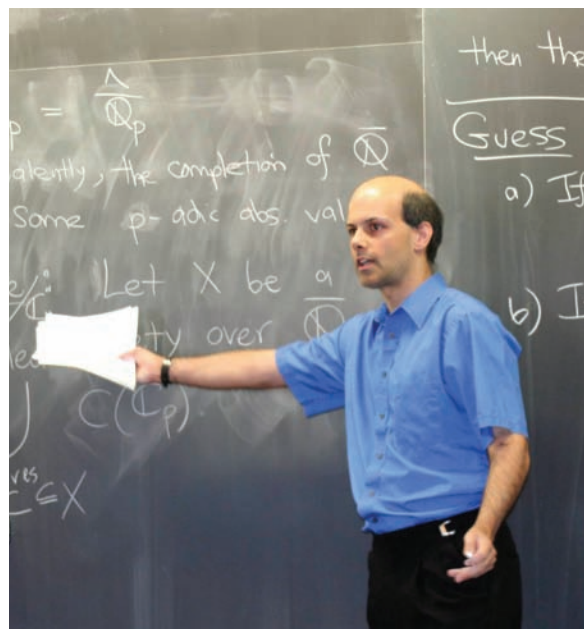
May 14–15. Clay Research Conference, Harvard University Science Center, Cambridge.

June 2. Developments in Algebraic Geometry Conference in Honor of David Mumford at Brown University.

June 7–11. Geometry and Imagination Conference at Princeton University.

June 7–20. Summer School on Serre’s Modularity Conjecture at CIRM in Marseille, France.

June 11–July 6. CMI 2007 Summer School on Homogeneous Flows, Moduli Spaces and Arithmetic in Pisa, Italy.



Bjorn Poonen presenting his talk “Speculations about Rational Curves on Varieties over Countable Fields” at CMI’s Rational Curves Workshop.

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July 23–27. Infinite Dimensional Algebras and Quantum Integrable Systems II Conference at the University of the Algarve in Faro, Portugal.

July 30–August 3. Conference On Certain L-Functions at Purdue University.

August 12–17. IV IberoAmerican Conference on Complex Geometry at Centro Metalurgico, Ouro Preto in Minas Gerais, Brazil.

August 27–31. Colloque JPB at IHES and L'Ecole Polytechnique in Paris.

September 18–21. Solvability and Spectral Instability at CMI.

September 30. SAGE Days 5: Computational Arithmetic Geometry at CMI.

November 2–4. Workshop on Geometry of Moduli Spaces of Rational Curves with Applications to Deophantine Problems over Function Fields at CMI.

December 11–14. Clay Lecture Series at the Tata Institute of Fundamental Research (TIFR) in Mumbai, India.



Izzet Coskun (MIT) presenting his talk on “Vanishing of Quantum Cohomology” at CMI’s Rational Curves Workshop.



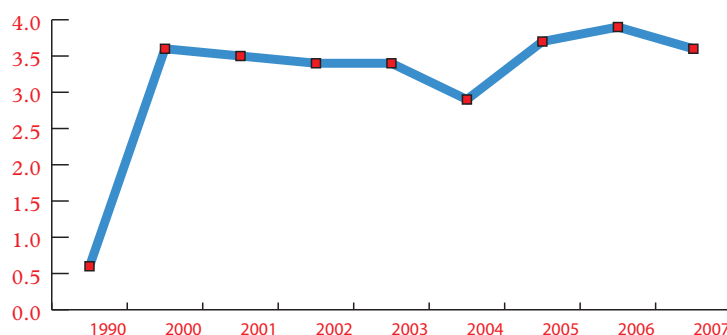
Kirsten Eisentraeger (Penn State) discussing “Hilbert’s Tenth Problem for Function Fields of Varieties over  $C$ ” at CMI’s Rational Curves Workshop.

## Program Allocation

Estimated number of persons supported by CMI in selected scientific programs for calendar year 2007:

Research Fellows, Research Awardees, Senior Scholars, Research Scholars, Book Fellows, Liftoff Fellows	45
Summer School participants and faculty	110
Student Programs, participants and faculty	140
CMI Workshops	95
Participants attending joint programs and the Independent University of Moscow	> 1000

## IRS Qualifying Charitable Expenses of CMI Since Inception



Total through September 30, 2007: Over \$28 million