

Sa'ar David Hersonsky

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Areas of interest: Geometry and Topology

Education:

1986–89	B.Sc.	Mathematics	Technion, Israel, Institute for Technology
1989–91	Graduate study	Mathematics	Hebrew University, Israel
1991–94	Ph.D.	Mathematics	University of Illinois at Chicago

Employment:

1994–96	H.C. Wang Assistant Professor	Cornell University
1996–97	Postdoctoral Fellowship	MSRI-Mathematical Sciences Research Institute, Berkeley
1997–99	Olga Taussky-John Todd instructor	California Institute for Technology
2000–02	Lecturer of Mathematics	Ben-Gurion University - Israel
2002–05	Senior Lecturer of Mathematics	Ben-Gurion University - Israel
2005–	Associate Professor	University of Georgia

Visiting Research Positions (with funding)

Jun–Aug 1995	”Poste-rose” position, UMPA, ENS-Lyon, France
Jan–Aug 1996	Fellowship of the French Foreign Office, Centre Emile-Borel (IHP-Paris)
Aug–Oct 1998	IHES, Paris
Sept 1999	Professeur invité, Department of mathematics, ORSAY
Oct–Jan 2000	Centre Emile-Bore (IHES, Paris)
July-Sept 2000	Visiting Research Associate in Mathematics, Caltech
Oct 2000	IHES, Paris
2001–02	Senior Visiting Associate, Department of Mathematics, Caltech
Jul-Aug 2003	Department of Mathematics, Princeton University
Aug–Oct 2003	Department of Mathematics, Caltech
Jan–Jul 05	Visiting Associate Professor, Department of Mathematics, Princeton University
Jun 2008	Centre Emile-Borel (IHP-Paris), (“Ricci flow program”).

Individual Research Grants: Principal Investigator

1. 2001-2005 A \$40,000 grant given by the David and Elaine Potter Charitable Foundation (a single recipient among all Sciences – Ben Gurion University)

Conference Grants:

1. 2006-2009 NSF grant DMS-0605442, \$33,680.00,(Co-PI: W. Kazez and Gordana Matic) Georgia Topology Conference
2. 2009 NSF grant DMS - 0852505, \$141,750.00 ,(Co-PI: PI W. Kazez, Gordana Matic and Clint McCrory) Georgia International Topology Conference

Publications: Most are available on web page listed above.

1. *Jorgensen's inequality for discrete groups in normed algebras*, (with S. Friedland), Duke Math. J. **69** (1993), 593-614.
2. *Covolume estimates for discrete groups of hyperbolic isometries having parabolic elements*, Mich. Math. J., **40** (1993), 467-475.
3. *A generalization of the Shimizu-Leutbecher lemma and the Jorgensen inequality to Möbius transformations in $\hat{\mathbb{R}}^n$* , Proc. Amer. Math. Soc., **121** (1994), 209-215.
4. *On the volumes of complex hyperbolic manifolds*, (with F. Paulin), Duke Math. J., **84** (1996), 719-737.
5. *Groups of automorphisms of trees and their limit sets*, (with J.H. Hubbard), Ergodic Theory and Dynamical Systems, **17** (1997), 869-884.
6. *On the rigidity of discrete isometry groups of negatively curved spaces*, (with F. Paulin), Comm. Math. Helv., **72** (1997), 349-388.
7. *On the Betti number of the smallest closed Hyperbolic 3-manifold*, (with M. Culler and P.B. Shalen), Topology, **37** (1998), 805-849.
8. *Counting horoballs and rational geodesics*, (with F. Paulin and K. Belabas), Bull of the London Mathematical Society, **33** (2001), 606-612.
9. *Hausdorff dimension of diophantine geodesics in negatively curved manifolds*, (with F. Paulin), Journal für die reine und angewandte Mathematik, **539** (2001), 29-43.
10. *Diophantine approximation in negatively curved manifolds and in the Heisenberg group*, (with F. Paulin), "Rigidity in dynamics and geometry (Cambridge, 2000)", M. Burger, A. Iozzi eds, Springer, Berlin (2002), 203-226.
11. *Diophantine approximations for negatively curved manifolds*, (with F. Paulin), Mathematische Zeitschrift, **241** (2002), 181-226.
12. *Approximations by maximal cusps on the boundary of quasiconformal deformation space*, (with R.D. Canary, M. Culler and P.B. Shalen), Journal of Differential Geometry, **64** (2003), 57-109.
13. *Counting orbit points in coverings of negatively curved manifolds and Hausdorff dimension of cusp excursions*, (with F. Paulin), Ergodic Theory and Dynamical Systems, **24** (2004), 803-824.
14. *Ubiquity of geometric finiteness in boundaries of deformation spaces of hyperbolic 3 manifolds*, (with R.D. Canary), American Journal of Mathematics, **126** (2004), 1193-1220.
15. *A logarithm law for automorphism groups of trees*, (with F. Paulin), Archiv der Mathematik, **88** (2007), 97 –108.
16. *Energy and length in a topological planar quadrilateral*, Euro. J. of Combinatorics, **29** (2008), 208 – 217.
17. *On the almost sure spiraling of geodesics in negatively curved manifolds*, with F. Paulin, accepted for publication, February 2009, Jour. of Differential Geometry, 44 pages.
18. *Discrete boundary value on planar graphs and translation surfaces,I:Dirichlet problem*, in preparation.
19. *Discrete boundary value on planar graphs and translation surfaces,II:Dirichlet-Neumann problem*, in preparation.
20. *Quasisymmetric rigidity of negatively curved manifolds with positive h-rank*, in preparation.

Academic Honors/Awards/Recognition:

- 1982 Israeli Olympiad in Mathematics, prize of distinction
- 1988–89 President’s prize, Technion-Israel Institute for Technology
- 1989–90 Dean’s prize, Technion-Israel Institute for Technology
- 1992–1994 University of Illinois at Chicago Fellowship
- 1996–1997 MSRI Postdoctoral fellowship
- 2005 Paid invitation to attend Wu-chung Hsiang’s special geometry and topology conference
Princeton University
- 2009 Paid invitation to attend the Clay Research Conference, Cambridge, Massachusetts
(unable to attend)
- 2009 Paid invitation to attend Charles Fefferman’s 60th birthday
(International conference at Princeton University)

Talks:

Conferences (Principal speaker):

- 1992 Netanyahu Memorial Conference (1 hour), Technion- Israel Institute of Technology
- 1995 Albany Group Theory Conference (20 minutes)
- 1996 Knots and 3-manifolds , MSRI Conference (1 hour)
- 1998 MSJ Regional workshop on *Cone manifolds and hyperbolic geometry*, Tokyo (1 hour)
- 2000 International conference on geometric group theory, Technion - Israel (30 minutes talk)
- 2002 AMS special session on “Hyperbolic Manifolds”, Ann-Arbor, MI (30 minutes talk)
- 2006 Southeast Geometry Conference, University of Alabama at Birmingham (1 hour talk)
- 2007 G^3 (geometric group theory) conference, New-Orleans (two one hour talks)
- 2008 Workshop on Ergodic Theory and Geometry (1 hour talk), University of Manchester, England

Seminar and Colloquium Talks (Recent):

- 2001 Seminar in topology, Caltech
- 2003 Seminar in topology, Tel-Aviv university, Israel
- 2003 Seminar in topology, Caltech
- 2003 Seminar in topology, Stanford university
- 2004 Colloquium, University of Southern California
- 2004 Colloquium, University of Virginia
- 2005 Colloquium, University of Georgia
- 2005 Colloquium, Rice University
- 2005 Colloquium, Florida State University
- 2005 Seminar in topology, Princeton University
- 2006 Colloquium, Virginia Tech
- 2007 Seminar in differential geometry, Emory University
- 2007 Seminar in topology, University of Georgia
- 2007 Seminar in geometry, University of Georgia
- 2008 Seminar in topology, University of Georgia
- 2008 Seminar in geometry, University of Georgia
- 2008 Seminar in topology, Georgia Tech
- 2008 Seminar in “subRiemannian geometry seminar”, University of Georgia (3 talks)
- 2009 Seminar in differential geometry, UIUC (2009, accepted)

Teaching Experience, Courses Taught:

Caltech: 1997–99 Topology/Geometry graduate courses in topology
2000–01 Topology/Geometry graduate courses in topology

Ben-Gurion University (Israel): 2000–05 Calculus (various times)
“introduction to hyperbolic geometry”
“Introduction to differential geometry” (2)
“Introduction to Mathematica” (3)

Princeton University: 2005 Topology/Geometry graduate courses in topology

University of Georgia: 2005–06 MATH 8210 graduate course in topology
MATH 2200 (2) Calculus
2006–07 2200 (2) Calculus
MATH 8230 graduate course in topology/geometry
2007–08 MATH 8250 graduate course in topology/geometry
VIGRE Circle Packing
MATH 8250 graduate course in topology/geometry
2008–09 MATH 2400/H Honor Calculus
MATH 2410/H Honor Calculus
VIGRE Circle Packing

Service as an Advisor:

2007–08 Hua Bai, University of Georgia, Postdoctoral Research Advisor
2008– Jennifer Belton, University of Georgia, Ph.D Thesis Advisor

Professional Activities:

Member American Mathematical Society,
Referee Transactions of the American Mathematical Society,
Proceedings of the American Mathematical Society,
Duke Mathematical Journal, J., Analyse Math, Israel J. of Mathematics,
Geometry & Topology, Topology and its applications, and
Annals of Mathematics

Service to the Department:

Service on Departmental Committees:

- 2005–06 Personnel Committee
- 2006–08 Graduate Committee
- 2008–10 Executive Committee
- 2009–10 Cantrell Lecture Series Committee (Chair)

Other:

- 2005–08 member of oral committees for several graduate students
- 2005–08 member of several qualifying committees: topology, complex analysis (chair)
- 2005–08 Inviting and hosting distinguished internationally known visitors who delivered high quality seminars and/or Colloquium in the department:
 - F. Paulin (Ecole Normale Supérieure, Paris)
 - M. Wolf (Rice University)
 - B. Goldman (University of Maryland)
 - Y. Minsky (Yale University)
 - G. Besson (Institut Fourier Universit de grenoble, France)
 - G. Courtois (Ecole polytechnique, Palaiseau, France)
- 2006 Job application workshop for graduate students (joint with Nakano)
- 2007 Job application workshop for graduate students (joint with Nakano)
- 2007 Creative Research Medal folder preparation (for Matic and Kazez)
- 2008 Staff Holiday gift- organizer
- 2008–09 “Riemannian and subRiemannian geometry seminar” - Fall/Spring 2009, sole organizer
- 2009 Distinguished Research Professor folder preparation (for Dr. Nakano), with Dr. Carlson
- 2009 Meigs Teaching award folder preparation (for Dr. Adams), an apprentice with Dr. Azoff and Dr. Shifrin

Service as a Conference Organizer:

- 2006 Georgia Topology Conference (sole organizer)
- 2009 The 19th Southeast Geometry Conference (with J. Cantarella and J. Fu)