

William Hamilton Meeks, III

April 29, 2008

DATE OF BIRTH: August 8, 1947
PLACE: Washington, D. C.
ADDRESS: Department of Mathematics
University of Massachusetts
Amherst, MA 01003
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EDUCATION:
1971 University of California, Berkeley B.A. Mathematics
1974 University of California, Berkeley M.A. Mathematics
1975 University of California, Berkeley Ph.D. Mathematics
(Thesis advisor: B. Lawson)

PROFESSIONAL EMPLOYMENT:
1986- present University of Massachusetts George David Birkhoff
Professor of Mathematics
1985-86 Univ. of California, Santa Barbara Visiting Professor
1984-86 Rice University Professor
1983-84 Institute for Advanced Study Visiting Member
1979-83 IMPA Professor
1978-79 Stanford University Assistant Professor
1977-78 IMPA (Rio de Janeiro, Brazil) Assistant Professor
1975-77 UCLA Hederick Assistant Professor

RESEARCH AREAS:

Differential Geometry Minimal Surfaces Low-Dimensional Topology
Computational Methods in Geometry and Analysis

CURRENT RESEARCH SUPPORT:

N.S.F. Mathematical Sciences DMS-0405836. "Research in Differential Geometry and Topology," 7/1/07–06/3/10.

AWARDS:

Guggenheim Foundation Fellowship for 2006 - 2007.

OTHER WORK:

"Getting to the Surface: The Mathematics of Soap Films and Soap Bubbles Investigated with the Aid of Computer Graphics." An exhibition of 55 photographs and two sculptures illustrating our current research using computer graphics in the study of minimal surfaces and surfaces of constant mean curvature (with David Hoffman and James Hoffman). Lawrence Hall

of Science, U. C. Berkeley June 15-September 15, 1986. National Academy of Sciences, Washington, D.C. November 1 1986- January 1, 1987. Touring with the Association of Science and Technology Center in 1987-89. An associated exhibit was on display at the Palais des Decourves in Paris during 1990-91.

OTHER ACTIVITIES:

1990 Panel member for review of National Science Foundation, Science and Technology Center proposals.

1990 Panel member for site visit of the proposed National Science Foundation, Science and Technology Center at Minneapolis, MN.

Ph.D. advisees: Fusheng Wei, Ph.D. University of Massachusetts, 1991

Wayne Rossman, Ph.D. University of Massachusetts, 1992

Haiping Luo, Ph.D. University of Massachusetts, 1997

Rosanna Golatta, Ph.D. University of Massachusetts, 1998

PUBLICATIONS :

- 1975 The Geometry and Conformal Structure of Triply Periodic Minimal Surfaces in \mathbb{R}^3 , *Doctoral Thesis, University of California, Berkeley.*
- 1977 The Conformal Structure and Geometry of Triply Periodic Minimal Surfaces in \mathbb{R}^3 , *Bulletin of the AMS* 83 134–136.
- 1977 Representing Homology Classes by Embedded Circles and the Existence of Circles Invariant by Isometries, *Bulletin of the AMS* 83 1037–1038.
- 1977 Representing Codimensional-one Homology Classes by Embedded Submanifolds (with J. Patrusky), *Pacific Journal of Math.* 68 175–176.
- 1978 Representing Homology Classes by Embedded Circles on a Compact Surface, *Illinois Journal Math.* 22 262–269.
- 1978 Lectures on Plateau’s Problem, *Instituto de Matematica Pura e Aplicada (IMPA) Rio de Janeiro, Brazil.*
- 1978 Une Obstruction Elementaire a L’existence d’une Action Continue de Groupe une Variete (with M. Freedman), *C.R. Acad. Sc. Paris* 268 195–198.
- 1979 Circles Invariant by a Diffeomorphism of Finite Order, *Journal of Differential Geometry* 14 377–383.
- 1979 Representing Codimension-one Homology Classes on Closed Non-orientable Manifolds by Submanifolds, *Illinois Journal Math* 23 199–210.
- 1980 Topology of three dimensional manifolds and the embedding problems in minimal surface theory (with S.–T. Yau), *Annals of Math* 112 441-484.
- 1981 The Topological Uniqueness of Minimal Surfaces in Three-dimensional Euclidean Space, *Topology* 20 389-410.

- 1981 Uniqueness Theorems for Minimal Surfaces, *Illinois Journal of Math.* 25 318–336.
- 1981 A Survey of the Geometric Results in the Classical Theory of Minimal Surfaces, *Bol. Soc. Brasil Mat.* 12 29–86.
- 1981 The Classification of Complete Minimal Surfaces with Total Curvature Greater Than -8π , *Duke Math Journal* 48 523–535.
- 1981 The equivariant Dehn’s Lemma and Loop Theorem (with S.–T. Yau), *Commentarii Mathematici Helvetici* 56 225–239.
- 1982 The Existence of Embedded Minimal Surfaces, Exotic Spheres and Positive Ricci Curvature (with L. Simon and S.–T. Yau), *Annals of Math.* 116 221–259.
- 1982 The Existence of Embedded Minimal Surfaces and the Problem of Uniqueness (with S.–T. Yau), *Math. Z.* 179 151–168.
- 1982 The Classical Plateau Problem and the Topology of Three-dimensional Manifolds (with S.–T. Yau), *Topology* 21 409–442.
- 1983 The Topology of Complete Minimal Surfaces of Finite Total Gaussian Curvature (with L. Jorge), *Topology* 22 203–221.
- 1983 Sur la Courbure de Surfaces Nouees Dans \mathbb{R}^3 (with N. Kuiper), *Societe Mathematique de France, Asterisque* 107 215–217.
- 1984 Compact Group Actions on \mathbb{R}^3 (with S.–T. Yau), *Conference on the Smith Conjecture*, Academic Press.
- 1984 The Equivariant Loop Theorem for Three Dimensional Manifolds and a Review of the Existence Theorems for Minimal Surfaces (with S.–T. Yau), *Conference on the Smith Conjecture*, Academic Press. 167–179.
- 1985 The Total Curvature of a Knotted Torus, *Inventiones Math.* 77 25–69.
- 1985 Complete Embedded Minimal Surfaces of Finite Total Curvature (with D. Hoffman), *Bulletin of the AMS* 21 109–127.
- 1985 A Complete Embedded Minimal Surface in \mathbb{R}^3 with Genus One and Three Ends (with D. Hoffman), *Journal of Differential Geometry* 21 109–127.
- 1986 Finite Group Actions on 3-Manifolds (with P. Scott), *Inventiones Math.* 86 221–259.
- 1987 Recent Progress on the Geometry of Surfaces in \mathbb{R}^3 and on the use of Computer Graphics as a Research Tool *Proc. International Congress of Mathematics.*
- 1987 Properties of Properly Embedded Minimal Surfaces of Finite Total Curvature (with D. Hoffman), *Bulletin of the AMS* 17 296–300.
- 1987 The Topology and Geometry of Embedded Surfaces of Constant Mean Curvature, *Bulletin of the AMS* 17 315–317.

- 1987 The Total Curvature of a Knotted Torus (with N. Kuiper), *Journal of Differential Geometry* 26 371–384.
- 1988 The topology and geometry of embedded surfaces of constant mean curvature, *Journal of Differential Geometry* 27 539–552.
- 1988 The Geometry, Topology, and Existence of Doubly Periodic Minimal Surfaces (with H. Rosenberg), *C. R. Acad. Sci. Paris* 306 605–609.
- 1988 A variational approach to the existence of complete embedded minimal surfaces (with D. Hoffman), *Duke Journal of Math.* 57 877–894.
- 1989 Embedded Minimal Surfaces with an Infinite Number of Ends (with M. Callahan and D. Hoffman), *Inventiones Math.* 96 459–505.
- 1989 The Global Theory of Doubly Periodic Minimal Surfaces (with H. Rosenberg), *Inventiones Math.* 97 351–379.
- 1989 The asymptotic behavior of properly embedded minimal surfaces of finite topology (with D. Hoffman), *Journal of the AMS* 2 667–681.
- 1990 The Maximum Principle at Infinity for Minimal Surfaces in Flat Three-Manifolds (with H. Rosenberg), *Commentarii Mathematici Helvetici* 65 255–270.
- 1990 A Rigidity Theorem for Properly Embedded Minimal Surfaces in \mathbb{R}^3 (with T. Choi and B. White), *Journal of Differential Geometry*
- 1990 The structure of singly-periodic minimal surfaces (with M. Callahan and D. Hoffman), *Inventiones Math.* 99 455–481.
- 1990 Embedded Minimal Surfaces of finite topology (with D. Hoffman), *Annals of Mathematics* 131 1–34.
- 1990 Recent work on the geometry of properly embedded minimal and constant mean curvature surfaces in \mathbb{R}^3 *Geometry and Topology of Submanifolds, II World Scientific Publishing Co. Pte. Ltd.* 249–270.
- 1990 Les surfaces minimales: la caténoïde par les deux bouts (with D. Hoffman), *Quadrature* 5 31–47.
- 1990 Minimal Surfaces Based on the Catenoid (with D. Hoffman), *Amer. Math. Monthly, Special Geometry Issue* 97 702–730.
- 1990 The Topology of Complete One-Ended Minimal Surfaces and Heegaard Surfaces in \mathbb{R}^3 (with C. Frohman), *Bulletin of the AMS* 23 417–421.
- 1990 Limits of Minimal Surfaces and Scherk’s Fifth Surface (with D. Hoffman), *Arch. Rat. Mech. Anal.* 111 181–195.
- 1990 The Theory of Triply-Periodic Minimal Surfaces, *Indiana University Math. Journal* 39 877–939.
- 1991 Some Global Properties of Complete Minimal Surfaces of Finite Topology in \mathbb{R}^3 , *Topology* 30 9–20.

- 1991 Minimal Surfaces Bounded By Convex Curves in Parallel Planes (with B. White), *Commentarii Mathematici Helvetici* 66 263–278.
- 1991 Minimal surfaces bounded by a pair of convex planar curves (with B. White), *Bulletin of the AMS.* 24 179–184.
- 1991 Minimal Surfaces Bounded By Convex Curves in Parallel Planes (with B. White), *Commentarii Mathematici Helvetici* 66 263–278.
- 1992 Constant mean curvature surfaces in hyperbolic space (with N. Korevaar and R. Kusner), *American Journal of Math.* 114 1–43.
- 1992 The Topological Uniqueness of Complete Minimal Surfaces of Finite Topological Type (with S.-T Yau), *Topology* 31 305–316.
- 1993 The geometry, topology, and existence of periodic minimal surfaces, *Proceedings of Symposia in Pure Math* 54 333–374.
- 1993 The Geometry of Periodic Minimal Surfaces (with H. Rosenberg), *Commentarii Mathematici Helvetici* 68 538–578.
- 1993 The Geometry and Conformal Structure of Properly Embedded Minimal Surfaces of Finite Topology in \mathbb{R}^3 (with H. Rosenberg), *Inventiones* 114 625–639.
- 1993 The Space of Minimal Annuli Bounded by an Extremal Pair of Planar Curves (with B. White), *Communications in Analysis and Geometry* 1 415–437.
- 1997 The Topological Uniqueness of Complete One-ended Minimal Surfaces and Heegaard Surfaces in \mathbb{R}^3 (with C. Frohman), *Journal of the AMS* 10 495–512.
- 1997 The Ordering Theorem for the Ends of Properly Embedded Minimal Surfaces (with C. Frohman), *Topology* 36 605–617.
- 1997 Classification des surfaces minimales de genre zéro proprement plongées dans $\mathbb{R}^3/\mathbb{Z}^2$ (with H. Lazard–Holly), *Géométrie* 1 753–754.
- 1998 Uniqueness of the Riemann Minimal Examples (with J. Perez and A. Ros), *Inventiones Math.* 131 107–132.
- 2001 Classification of doubly-periodic minimal surfaces of genus zero (with H. Lazard–Holly), *Inventiones Math.* 143 1–27.
- 2002 Minimal Surfaces in Flat Three Dimensional Space Forms, in The Global Theory of Minimal Surfaces in Flat Spaces based on CIME conference proceedings at Martina Franca 1999, Springer Lecture Notes in Math 1775, 1–14.
- 2003 Topological aspects of minimal surfaces in \mathbb{R}^3 , *Topology and Geometry of Manifolds: Georgia Topology Conference Proceedings of Symposia in Pure Mathematics*, 71, 69–79.
- 2003 Geometric results in classical minimal surface theory, *Surveys in Differential Geometry*, VIII, 269–306.

- 2004 The geometry and topology of singly-periodic minimal surfaces, *Asian Journal of Math.*, 7:3 297–302.
- 2004 The regularity of the singular set in the Colding-Minicozzi lamination theorem, *Duke Journal of Math.* 123:2 329–334.
- 2004 The geometry of minimal surfaces of finite genus I; curvature estimates and quasiperiodicity (with J. Perez and A. Ros), *Journal of Differential Geometry* 66 1–45.
- 2004 The geometry of minimal surfaces of finite genus II; nonexistence of one limit and examples (with J. Perez and A. Ros), *Inventiones* 158 323–341.
- 2004 Conformal properties in classical minimal surface theory (with J. Perez), *Surveys in Differential Geometry, IX* 275–336.
- 2004 The maximum principles at infinity for surfaces of bounded mean curvature in \mathbb{R}^3 and \mathbb{H}^3 (with R. Lima), *Indiana Journal of Math.* 53:5 1211–1223.
- 2005 The uniqueness of the helicoid and the asymptotic geometry of properly embedded minimal surfaces of finite topology (with H. Rosenberg), *Annals of Math.* 161 727–758.
- 2005 The stability theorem (with H. Rosenberg), *Journal of Differential Geometry. Volume 68, Number 3* 515–534.
- 2005 Minimal surfaces with finite topology (with H. Rosenberg), *Proceedings of Clay Minimal Surface Conference, 2001, Clay Mathematics Proceedings Volume 2*, 471–488.
- 2005 Global problems in classical minimal surface theory, *Proceedings of Clay Minimal Surface Conference, 2001, Clay Mathematics Proceedings Volume 2*, 453–470.
- 2005 Uniqueness of the Riemann Minimal Surfaces (written by J. Perez [joint research with William Meeks and A. Ros]), *Proceedings of Clay Minimal Surface Conference, 2001, Clay Mathematics Proceedings Volume 2*, 597–610.
- 2005 Proofs of some classical theorems in minimal surface theory, *Indiana Journal of Math. Volume 54, Number 4*, 1031 – 1046.
- 2005 The theory of minimal surfaces in $M \times \mathbb{R}$ (with H. Rosenberg), *Commentarii Mathematici Helvetici. Volume 80*, 811–858.
- 2005 The lamination metric for a Colding Minicozzi minimal lamination, *Illinois Journal of Math. Volume 49*, 645–658.
- 2006 Applications of minimal surfaces to the topology of three-manifolds. *Surveys in Differential Geometry, X* Essays in geometry in memory of S. S. Chern 95–108.
- 2006 The minimal lamination closure theorem (with H. Rosenberg), *Duke Journal of Math Volume 133, Number 3*, 467–497.

- 2006 The Liouville type properties for embedded minimal surfaces, (with J. Perez and A. Ros), *Communications in Analysis and Geometry, Volume 14, Number 4*, 703–723.
- 2007 Minimal surfaces with the area growth of two planes; The case of infinite symmetry (with M. Wolf), *JAMS, Volume 20, Number 2*, 441-465.
- 2007 The structure of stable minimal surfaces near a singularity, *Michigan Mathematics Journal, Volume 55, Number 1*, 155-161.
- 2007 Bounded domains which are universal for minimal surfaces, (with F. Martin and N. Nadirashvili), *American Journal of Math, Volume 129, Number 2*, 455-461.

Accepted:

- The topological classification of minimal surfaces in \mathbb{R}^3 (with C. Frohman), *Annals of Math*.
- Limit leaves of a CMC lamination are stable (with J. Perez and A. Ros), *Journal of Differential Geometry*.
- Maximum principles at infinity (with H. Rosenberg), *Journal of Differential Geometry*.
- Bending the helicoid (with M. Weber), *Mathematische Annalen*.
- Embedded minimal and constant mean curvature surfaces in locally homogeneous three-manifolds, *Lecture surveys at Oberwolfach 2007*.

Submitted:

- The CMC Dynamics Theorem (with G. Tinaglia) submitted to *Inventiones*.
- Stable constant mean curvature surfaces (with J. Perez and A. Ros), submitted to *Handbook on Differential Geometry*.
- The classical theory of minimal surfaces (with J. Perez), invited submission to *BAMS*. Presently this manuscript is 144 pages long.
- Properly embedded minimal planar domains (with J. Perez and A. Ros), submitted to *Annals of Math*.
- The rigidity of constant mean curvature surfaces (with G. Tinaglia), submitted to *Journal of Geometry*.

Preprints (not yet submitted):

- Bounds on the topology and index of classical minimal surfaces (with J. Perez and A. Ros), to be submitted to *Annals of Math*.
- The local removable singularity theorem for minimal laminations (with J. Perez and A. Ros), to be submitted to *Annals of Math*.

The existence of proper minimal surfaces of arbitrary topological type (with L. Ferrer and F. Martin), to be submitted to *JAMS*.

The *CMC* Dynamics Theorem for homogeneous n -manifolds (with G. Tinaglia).

Properness results for constant mean curvature surfaces (with G. Tinaglia).

The local picture theorem on the scale of topology (with J. Perez and A. Ros), to be submitted to *Annals of Math*.

Structure theorems for singular laminations, (with J. Perez and A. Ros). to be submitted to *JAMS*.

The embedded Calabi-Yau conjectures for finite genus (with J. Perez and A. Ros), to be submitted to *Commentarii*.

In Preparation:

The embedded Calabi-Yau conjectures (with F. Martin and N. Nadirashvili), to be submitted to *Annals of Math*.

Embedded minimal surfaces of finite genus, to be submitted to *Publication of the Current Developments in Mathematics Conference Talks, Fall 2008*.

Classical properness theorems for *CMC* surfaces (with J. Perez and A. Ros), to be submitted to *Inventiones*.

Minimal surfaces whose Gauss map misses four points (with J. Perez and A. Ros).

Brownian motion on minimal surfaces via the Gauss map (with J. Perez).

The asymptotic behavior of complete embedded minimal surfaces with one end (with J. Perez).

CMC surfaces in locally homogenous three-manifolds (with G. Tinaglia), to be submitted to *Annals of Math*.

The space of embedded *CMC* surfaces in a three-manifold (with G. Tinaglia).

Extension of multi-graphs in *CMC* surfaces (with G. Tinaglia).

The *CMC* lamination closure theorem (with G. Tinaglia), to be submitted to *Annals of Math*.

Minimal surfaces with the area growth of two planes; the case of unique limit tangent plane at infinity (with M. Wolf), to be submitted to *JAMS*.

Proof of the finite flux conjecture in dimension two (with M. Wolf).

The topological classification of Bryant surfaces in hyperbolic three-space.
A survey of *CMC* surfaces in locally homogenous three-manifolds.

PROFESSIONAL PRESENTATIONS AND INVITATIONS:

Presentations in 1999

Geometry Seminar talk at Harvard University, Cambridge, Massachusetts.

Colloquium speaker at Brown University.

Plenary speaker at International Japanese-American Conference at John Hopkins University.

Five plenary lectures at CIME conference in July 1999 at Martina Franca, Italy.

Colloquium speaker at the University of Milan, Milan, Italy.

Colloquium speaker at the University of Pavia, Pavia, Italy.

Plenary speaker at Geometry Conference at Luminy, Marseille, France.

Geometry Seminar talk at University of Granada, Granada, Spain.

Plenary speaker at International Geometry Conference at the Federal University in Belo Horizonte, Minas Gerais, Brazil.

Presentations in 2000

Plenary talk at Geometry conference at the Catholic University in Rio de Janeiro, Brazil.

Geometry Seminar talk at the Instituto de Matematica Pura e Applicada in Rio de Janeiro, Brazil.

Plenary speaker at International Geometry Conference at the Federal University in Niteroi, Rio de Janeiro, Brazil.

Geometry Seminar talk at the University of Paris VII, Paris, France.

Plenary speaker at International Geometry Conference in Bonn, Germany.

Three talks in geometry seminar at the University of Granada, Granada, Spain.

Presentations in 2001

Geometry Seminar talk, Harvard University Mathematics Department, Cambridge, Massachusetts.

Geometry Seminar talk, Universite de Paris VI, Paris, France.

Three talks in Geometry Seminar at the University of Granada, Granada, Spain.

Three talks in Geometry Seminar, IMPA in Rio de Janeiro, Brazil.

Four talks in Geometry Seminar, Federal University of Ceara, Brazil.

Three Plenary lectures at the Clay Summer School and NSF Research Program on minimal surfaces at MSRI.

Three invited general and seminar-type talks at the Clay Summer School and NSF Research program on minimal surfaces at the Mathematical Sciences Research Institute in Berkeley, California.

Plenary speaker at the International Foliations 2001 Conference at the Catholic University in Rio de Janeiro, Brazil.

Plenary speaker at the 2001 Georgia International Topology Conference, Athens, Georgia.

Colloquium speaker, University of Massachusetts Amherst.

Plenary speaker at annual Journal of Differential Geometry conference at Lehigh University in Lehigh, Pennsylvania. June.

Colloquium speaker at Rice University, in Houston, Texas. November.

Talk at the Alfors-Bers Conference at the University of Connecticut. November.

Presentations in 2002

Plenary speaker at NSF-supported yearly geometry conference at U.C. Irvine, Irvine, California. February.

Colloquium speaker at Harvard University, Cambridge, Massachusetts. March.

Geometry seminar talk at Rice University, in Houston, Texas. April.

Plenary speaker for the fifth International Geometry and Topology conference at Harvard University, Cambridge, Massachusetts. This conference is organized by the Journal of Differential Geometry once every three years. May.

Plenary speaker at International Geometry Conference in honor of 60th birthday of Professor H. Blain Lawson at University of New York at Stony Brook, Stony Brook, New York. June.

Seminar talk at University of Paris 7, June.

Plenary speaker at conference on “Harmonic maps, minimal surfaces and geometric flows” at the University of Bretagne Occidentale, Brest, France. July.

Plenary speaker at International Geometry conference at the Federal University in Goiania, Goiania, Brazil. July.

Geometry Seminar talks at IMPA, August.

Plenary speaker at International conference on Geometry, Foliations and Dynamical Systems at the Bussiere abbey near Dijon, France. September.

Presentations in 2003

Six lectures at Geometry meeting at IMPA, Rio de Janeiro, Brazil. January.

Gang geometry seminar talk at UMass. March.

Gang geometry seminar talk at UMass. April.

Graduate student seminar talk at UMass. March.

One-hour talk at special geometry session of the regional AMS conference at University of Indiana, Bloomington, IN. April.

One-hour talk in special session at joint AMS - Spanish MS in Seville, Spain. June.

Talk in geometry seminar at University of Granada, Granada, Spain. June.

Half-hour talk in geometry session at the 2003 Brazilian Colloquium at IMPA, Rio de Janeiro, Brazil. July.

Talk in geometry seminar at the University of Indiana. October.

Talk in topology seminar at the University of Indiana. October.

Colloquium talk at the University of Indiana. October.

Talk in geometric analysis seminar at Purdue University. November.

Colloquium talk at Purdue University. November.

Presentations in 2004

One-hour talk at International Geometry Conference at University of Granada, Granada, Spain. February.

One-hour talk at Third Annual Bloomington Geometry Workshop at the University of Indiana. April.

Geometry seminar talk at the University of Granada, Granada, Spain. June.

Five talks at summer school on Minimal Surfaces at University of Paris 6. July.

One hour talk at Geometry Summer School in San Paulo, Brazil. July.

One hour talk at geometry seminar at IMPA, Rio de Janeiro, Brazil. August.

Plenary talk at the annual meeting of the German Mathematical Society at Heidelberg. September.

One of seven main speakers at the annual 2-day Current Developments in Mathematics Seminar hosted by Harvard and MIT. November.

Presentations in 2005

Forty minute talk at special geometry session at the annual meeting of the AMS at Atlanta, Georgia. January.

Speaker in geometry seminar at the University of Granada, Granada, Spain. January.

Plenary speaker at the conference “Advances in Surface Theory” in Kloster Bendiktbeuern, Germany. January.

Talk in the analysis seminar at the University of Massachusetts, May.

A main speaker (one 2 1/2 hour talk) for the AIM/NSF Conference on Moduli Spaces of Properly Embedded Minimal Surfaces at the AIM Research Institute in Palo Alto, California. June.

Plenary speaker at the international geometry conference at the Federal University of Rio de Janeiro, Rio de Janeiro, Brazil. August.

Colloquium speaker at Columbia University. October.

Plenary speaker at one day international conference in geometry at the University of Granada. October.

Plenary lecture at the Geometry Seminar at the University of Massachusetts. October.

Talk in geometry seminar at Harvard. November.

Presentations in 2006

Talk in geometry seminar at Stanford University. February.

Plenary lecture at the TWIGS Seminar at the University of Massachusetts. February.

Lecture at the geometry seminar at Stanford University. February.

Plenary lecture at the Geometry Festival 2006 at the University of Pennsylvania. April.

Math Club at UMass, April.

Talk in geometry seminar at the University of Granada, Granada, Spain. June.

Plenary lecture at the Geometry School at the University of Bahia, Salvador, Bahia Brazil. July.

Two hour lecture in geometry seminar at IMPA, Rio de Janeiro, Brazil. July.

Colloquium speaker at the University of Pennsylvania. October.

Geometry seminar speaker at the University of Pennsylvania. October.

Plenary lecture at the Geometry Conference at John Hopkins University, Baltimore, Maryland. October.

Colloquium speaker at Notre Dame University. November.

Speaker at geometry/topology seminar at Notre Dame University. November.

Speaker at Geometry Day at the University of Granada. December.

Presentations in 2006

Speaker at conference on homogeneous spaces at the University of Arizona. March 2007.

An hour talk at the conference "Progress in Surface Theory" at Oberwolfach, Germany. April 2007.

Two hour talk in geometry seminar at the University of Paris 7. May 2007.

One of two speakers at Geometry Day at the University of Marseille, Marseille, France. June 2007.

Speaker at conference on "Geometry and partial differential equations" at Luminy, France. June 2007.

Speaker in topology/geometry seminar at the University of Massachusetts. September 2007.

Colloquium speaker at the University of Massachusetts at Amherst. September 2007.

Recent Invitations for Talks and Talks

Speaker in the geometry seminar at the University of Granada. January 2008.

Speaker in the geometry seminar at Mc Gill University in Montreal Canada. March 2008.

Colloquium speaker at Central Connecticut State University. April 2008.

Plenary speaker at the Sixth Tri-annual Journal of Differential Geometry conference at Harvard University. May 2008.

Eight research lectures at the third differential geometry lecture series at the Korean Institute for Advanced Study in Seoul, Korea. May 2008.

Colloquium at the University of Seoul, Seoul, Korea. May 2008.

Speaker at workshop on recent results in differential geometry in Rome, Italy. May 2008.

Speaker in the geometry seminar at the University of Granada. June 2008.

Plenary speaker at Geometry/Physics conference at Harvard University in honor of the 60th birthday of S.T. Yau. August 2008.

Two plenary talks at the Current Developments in Mathematics Conference at Harvard/MIT University. November 2008.