

Vitae: Bennett Palmer

- Address: Department of Mathematics

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Education

- 1975-1979 University of Massachusetts, Amherst, Massachusetts
Bachelor of Science, Mathematics
- 1980-1986 Stanford University
Ph.D. (under the direction of Robert Osserman)

Work Experience

- Fall 2007 to present, Professor, Idaho State University.
- Fall 2004 to 2007, Associate Professor, Idaho State University.
- Fall 2002 to Fall 2004, Assistant Professor, Idaho State University
- 1992-2002 Lecturer, University of Durham, Durham, UK
- 1999-2000 Visiting Professor, St. Mary's College, Moraga, Ca.
- 1997-1998 Sabbatical leave, University of Murcia, Murcia, Spain
supported by DGICYT grant no. SAB95-0494.
- 1989-1992 Postdoctoral position, Technische Universitaet Berlin
- 1986-1989 Assistant Professor, University of California at Santa Cruz
- 1986-1987 Lecturer, Stanford University

Publications and preprints

Refereed publications

1. *Anisotropic Umbilic points and Hopf's theorem for surfaces with constant anisotropic mean curvature*, Indiana Univ. Math. J., **59**(2010) 79-90.
2. *Area minimization among marginally trapped surfaces in Lorentz-Minkowski space*, to appear in Calculus of Variations and Partial Differential Equations.
3. *Anisotropic Surface Energy*, Proceedings of the Symposium on Riemann Surfaces, Harmonic Maps and Visualization, Osaka City University, 2009.
4. *Equilibria for anisotropic bending energies*, Journal of Math. Phys., Vol. 50, no 2,(2009)
5. *Equilibria for anisotropic energies and the Gielis formula*, Forma, Vol. 23, no. 1, 1-8(2008)(with Miyuki Koiso).
6. *A rolling construction for anisotropic Delaunay surfaces*, Pacific J. of Math., 2008, no. 2, 345-378.(with Miyuki Koiso).
7. *Uniqueness theorems for anisotropic capillary surfaces*, SIAM Journal on Mathematical Analysis, Vol. 39, no. 3, 2007 (721-741) (with Miyuki Koiso).
8. *Anisotropic capillary surfaces with wetting energy*, Calculus of Variations and Partial Differential Equations, Vol. 29, no. 3, 2007 (295-345). (with Miyuki Koiso).
9. *Stability of anisotropic capillary surfaces between two parallel planes*, Calculus of Variations and Partial Differential Equations, Vol. 3, 2006. (with Miyuki Koiso).
10. *Geometry and stability of surfaces with constant anisotropic mean curvature* Indiana Univ. Math. J., volume 54, issue 6, 2005,(with Miyuki Koiso).
11. *Geometry and stability of bubbles with gravity*, Indiana Univ. Math. J. 54 No. 1 (2005), 65-98), (with Miyuki Koiso)
12. *On a variational problem for soap films with gravity and free boundary*, Journal of the Mathematical Society of Japan, 57 (2005), no. 2, 333–355.(with Miyuki Koiso).
13. *Remarks on the stability of CMC surfaces of higher genus with circular boundary*, Complex Variables Theory Appl., 2003, Vol. 48, pg. 663-669.

14. *Biharmonic capacity and the stability of minimal Lagrangian submanifolds*, Tohoku Math. J., Vol.55, No.4, December, 2003)
15. *On the area of constant mean curvature discs and annuli with circular boundaries* (with Luis Alías), Math. Zetischrift., 237(2001)3, 585-599.
16. *On the Gaussian curvature of maximal surfaces and the Calabi-Bernstein theorem* (with Luis Alías), Bull. London Math. Soc., 33(2001), no. 4, 454-458 .
17. *Uniqueness theorems for Willmore surfaces with fixed and free boundaries*, Indiana University Math. Journal., 49(2000), no. 4, 1581-1601.
18. *A duality between the minimal surface equation and the maximal surface equation* (with Luis Alías), Anais de Academia Brasileira de Ciencias, 73(2001), no. 2, 161-164.
19. *Stability of Spacelike Zero Mean Curvature Surfaces in Flat Lorentzian 4-manifolds* (with Luis Alías), Global differential geometry: the mathematical legacy of Alfred Gray (Bilbao, 2000), 244-248, Contemp. Math., 288, Amer. Math. Soc., Providence, RI, 2001.
20. *Remarks on a variational problem in Laguerre geometry*, Rendiconti di Matematica, Serie VII,(1999), 281-293.
21. *Zero mean curvature surfaces in Minkowski space with non-negative curvature* , (with Luis Alías). R. Soc. Lond. Proc. Ser. A Math. Phys. Eng. Sci. 455 (1999), no. 1982, 631-636.
22. *Stable constant mean curvature surfaces with circular boundaries* , (with Luis Alías and Rafael Lopez), Proc. Amer. Math. Soc. 127 (1999), no. 4, 1195-1200.
23. *Stability of the Wulff shape* , Proc. Amer. Math. Soc. 126 (1998), no. 12, 3661-3667.
24. *Calibrations and Lagrangian submanifolds in the six sphere*, Tohoku Math. J. (2) 50 (1998), no. 2, 303-315.
25. *Curvature properties of zero mean curvature surfaces in four dimensional Lorentzian space forms*, (with Luis Alías), Math. Proc. Cambridge Philos. Soc. 124 (1998), no. 2, 315-327.
26. *Deformations of Stationary Surfaces* (with Luis Alías). Classical and Quantum Gravity, 14 (1997), 2107-2111.
27. *Hamiltonian minimality and Hamiltonian stability of Gauss Maps*, Differential Geometry and its Applications, 7, 1997,51-58.
28. *Conformal geometry of surfaces in Lorentzian space forms*, (with Luis Alías), Geometriae Dedicata, Vol.60, no.3(1996),301-315.

29. *The Bao - Ratiu equations on surfaces* , Proceedings of the Royal Society of London, no. 449(1995), 623–627.
30. *Buckling eigenvalues, Gauss maps and Lagrangian submanifolds*, Differential Geometry and its Applications, No. 4, (1994) 391–403.
31. *Minimal surfaces and H-surfaces in nonpositively curved space forms*, Proc. of the American Math. Soc., vol.119, no.1(1993), 245–250. .
32. *The conformal Gauss map and the stability of Willmore surfaces*, Annals of Global Analysis and Geometry, vol.9, no. 3,(1991)305–317. .
33. *Surfaces in Lorentzian hyperbolic space* , Annals of Global Analysis and Geometry, vol.9, no.2(1991) 117–128. .
34. *Stability of minimal hypersurfaces* , Comment.Math.Helvitici, 6, (1991) 185–188..
35. *Index and stability of harmonic Gauss maps*, Math.Zeitschrift, 206, (1990) 563–566..
36. *Spacelike constant mean curvature surfaces in pseudo- Riemannian space forms* , Annals of Global Analysis and Geometry, vol.8, no.3, (1990), 217–226.
37. *Bäcklund transformations for surfaces in Minkowski space* , Journal of Math.Physics , vol.31, no.12 (1990) 2872–2875 .
38. *The Gauss map of a spacelike constant mean curvature hypersurface of Minkowski space*, Comment. Math. Helvitici, 65, (1990) 52–57.
39. *Isothermic surfaces and the Gauss map* , Proc. of the American Math. Soc. 104, No.3, (1988) 876–884.

Unrefereed publications

1. *Variational problems for surfaces which are quadratic in their curvatures*, Curvature and Variational Modeling in Physics and Biophysics, published by the American Institute of Physics.
2. *Anisotropic capillary surfaces*, Proceedings on Differential Geometry, Valenciennes 2007. (with Miyuki Koiso).
3. *Conformal geometry and Willmore surfaces in Lorentzian space forms*, (with Luis Alías) Differential geometry and its applications (Granada, 1994), 145–153, An. Fs. Monogr., 2, CIEMAT, Madrid, 1995.
4. *Stability of minimal Lagrangian submanifolds*, Geometry of Submanifolds VII, World Scientific Press, 1995, 211–213.
5. *Buckling eigenvalues and variational problems for surfaces in the three sphere*, Geometry of Submanifolds VI , World Scientific Press, 1994, 165–170.
6. *Stability of harmonic Gauss maps*, in Geometry of Submanifolds V, World Scientific Press, 1993, 233–241
7. *Second variation formulas for Willmore surfaces*, The Problem of Plateau, World Scientific Press, 1992, 221–228.
8. *Geometry and Materials* to appear in the proceedings of the International Research School on Differential Geometry and Symmetry, University of Murcia.

Preprints and papers in preparation

1. *Stability of non liquid bridges*. with Josu Arroyo and Miyuki Koiso, Preprint 2009. (submitted)
2. *Equilibria for anisotropic surface energies with wetting and line tension*, Preprint 2009. (submitted)
3. *Helicoidal equilibria for anisotropic surface energies* (Joint work with Chad Kuhns) in preparation.
4. *Anisotropic capillary surfaces with hydrophilic wetting*, in preparation, with Miyuki Koiso.
5. *Bifurcation and symmetry breaking of nodoids with fixed boundary*, in preparation with Paolo Piccione and Miyuki Koiso.

Conferences and visits

- *Equilibria for anisotropic surface energies*, Peking University Beijing, PRC. June 11, 2010
- *The anisotropic Hopf Theorem*, Tsinghua University, Beijing, PRC. June 3, 2010
- *Area minimization among marginally trapped surfaces*. Peking University, Beijing, PRC, June 2, 2010.
- *Area minimization among marginally trapped surfaces*, Tongji University, Shanghai, PRC, May 23, 2010.
- *Equilibria for anisotropic surface energies*, Tongji University, Shanghai, PRC, May 21, 2010.
- *Equilibria for anisotropic surface energies*, Institute for Advanced Studies, Princeton Univ., April 26, 2010.
- *An anisotropic version of Hopf's Theorem*, Tokyo Institute of Technology, Dec. 9, 2009
- *Geometry and Materials*, International Research School on Differential Geometry and Symmetry, University of Murcia, Murcia, Spain, March 11, 2009.
- *Equilibria for anisotropic energies*, Symposium on Riemann Surfaces, Harmonic Maps and Visualization, Osaka City University, Osaka, Japan. December 17, 2008
- *Area minimization among marginally trapped surfaces in Lorentz-Minkowski space*, Kyushu University, Fukuoka, Japan, November 28, 2008.
- *Anisotropic surface energies with wetting and line tension*, Saga, University, Saga, Japan, November 20, 2008.
- *Stability of non liquid bridges*, Department of Physics, Waseda University, Tokyo, Japan, October, 27, 2008.
- *Equilibria for anisotropic surface energies with wetting and line tension*, Workshop on Recent Developments in Differential Geometry, Tohoku University, Sendai, Japan, October 16, 2008.
- *Equilibria for anisotropic surface energies*, Workshop on Differential Geometry, Beijing International Mathematics Center, September 21, 2008.
- *Area minimization among marginally trapped surfaces in Lorentz-Minkowski space*, Tsinghua University, Beijing, China, Sept. 11, 2008. .

- *Equilibria for anisotropic surface energies with wetting and line tension*, Tsinghua University, Beijing, China, Sept. 4, 2008.
- *Anisotropic Capillary Surfaces*, Universidad de Pais Vasco, Bilbao , Spain, Oct. 2007.
- Curvature and Variational Modeling in Physics and Biophysics, Santiago de Compostela, Spain, September 2007. Invited five lecture minicourse: *Variational Problems for Surfaces which are Quadratic in their Curvatures*.
- Symposium on Differential Geometry, Valenciennes, France , July 2007, *Stability of Anisotropic Capillary surfaces*.
- Nara Women's University, Nara, Japan, August 15, 2005 *Anisotropic Capillary Surfaces*
- Nara Women's University, Nara, Japan, August 15, 2005 *Variational Problems with Multiple Constraints*
- Nara Women's University, Nara, Japan, July 27, 2004 *Geometry of surfaces with constant anisotropic mean curvature*
- EDGE Conference on Variational Problems on Surfaces, Granada, Spain, Feb. 2004 *Geometry of surfaces with constant anisotropic mean curvature*
- Harmonic Maps and Minimal Surfaces, Tokyo Metropolitan University, Jan. 27, 2003, *Stability of minimal Lagrangian submanifolds*
- *Surfaces with Constant Anisotropic Mean Curvature*, Kyushu University, Fukuoka, Japan, January 30, 2003.
- Yorkshire Geometry Day, University of Hull, June 14, 2002: *Stability of minimal Lagrangian submanifolds*
- invited speaker: Conference in Honor of Tom Willmore, University of Durham, April 1999. *CMC and Willmore surfaces with Circular Boundary*
- invited speaker: University of Chile, Santiago, Chile, August 1998. *Variational Problems in Geometry*
- invited speaker: University of Lyon, June, 1998, *Stable constant mean curvature surfaces with circular boundary*
- participant: First conference on Geometry and Topology Braga, Portugal, Sept. 11-13, 1997.
- participant: International conference on Differential Geometry IMPA, Rio de Janeiro, Brazil July 8-19 1996
- visitor: University of Granada, September-December 1995

- invited speaker: University of York, Dec. 1994, *Minimal Lagrangian Submanifolds*
- invited speaker: Autumn workshop on Differential Geometry and its Applications, Granada, Spain, Oct. 1994
- invited speaker: Geometry of Submanifolds, University of Leuven, Belgium July 1994.
- invited speaker: Newton Institute, Cambridge, UK April 1994. *Willmore surfaces and Conformal Geometry*
- invited speaker: City University of New York, March 1994
- invited speaker: Geometry Day, University of Leeds, March 1993
- invited visitor: University of Murcia, Murcia Spain, Sept. 1993
- invited speaker: Geometry of Submanifolds, University of Leuven, July 1993
- invited speaker: Humboldt Universitaet Berlin, 1991
- invited speaker: Conference on Differential Geometry sponsored by the AMS, Mount Holyoke College, July 1991
- invited speaker: Geometry Conference, Oberwolfach, April 1990
- invited visitor, SFB 256, Universitaet Bonn, Summer 1989.

Additional Skills

- **Languages:** Spanish, German
- **Computer languages/skills:** C,C++, Python, Java, Html

Awards:

- Idaho State University- Outstanding Researcher 2004.

Conferences orgaized:

- Conference on Variational Problems for Curves and Surfaces-Nara Women's University, Nara, Japan. June 30-July 2, 2009.

Doctoral Students

- Chadrun Kuhns-*Helicoidal surfaces with constant anisotropic mean curvature* Thesis defended June 25, 2010.

Grant Support:

- Summer research stipend, SFB 256 "Non linear Partial Differential Equations", University of Bonn, 1987
- DGICYT Grant no. SAB95-0494 from the Spanish Ministry of Education and Culture provided one year of support in 1997.
- Member of SFB 288, "Differential Geometry and Quantum Physics", Technical University of Berlin. 1989
- Faculty Research Committee, ISU grant 2003.
- Summer research stipend. College of Arts and Sciences, ISU, 2005.
- Japanese Society for the Promotion of Science Fellowship JSPS F S-08154, October-December, 2008.

Referee for:

- Acta Mathematica Sinica
- American Mathematical Monthly
- Annals of Global Analysis and Geometry
- Calculus of variations and partial differential equations

- Commentarii Mathematici Helvetici. Journal of the Swiss Mathematical Society
- Communications in Mathematical Physics
- Geometriae Dedicata
- Illinois Journal of Mathematics
- The Journal of Geometric Analysis
- Journal of Geometry and Physics
- Journal of Inequalities and Applications
- London Mathematical Society
- Mathematical and Computer Modeling
- Mathematical Proceedings of the Cambridge Philosophical Society
- Math Reviews
- Missouri Journal of Mathematics
- Rendiconti del Seminario Matematico della Universit di Padova
- Resultate der Mathematik
- The Royal Society of London. Proceedings. Series A.
- SIAM Journal on Mathematical Analysis
- Southwest Journal of Mathematics

Courses taught-Undergraduate

- Elementary algebra
- Precalculus
- Calculus (all levels)
- Mathematics for Education majors
- Mathematics for Business majors (Finite mathematics)
- Real Analysis
- Complex Analysis
- Functional Analysis
- Differential equations for engineers
- Dynamical Systems
- Partial Differential Equations
- Differential Geometry

Courses taught-Graduate

- Minimal Submanifolds
- Differential Geometry
- Real Analysis
- Complex Analysis
- Global Analysis
- Calculus of Variations
- Partial Differential Equations