LIBIN MOU

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EDUCATION

Rice University	PH. D. in Math, May 1990
Sichuan University	MS (1986) & BS (1983)

ACADEMIC POSITIONS

Bradley University	2001-presemt	Associate Professor
Bradley University	1996-2001	Assistant Professor
Bradley University	1995-1996	Visiting Assistant Professor
University of Iowa	1993-1995	Visiting Assistant Professor
University of Southern California	1991-1993	Visiting Assistant Professor
Institute for Mathematics and its Applications, University of Minnesota	1990-1991	Research Associate

TEACHING EXPERIENCE

Courses taught include *finite mathematics, precalculus, calculus sequence, business calculus, foundations of geometry, probability and statistics, numerical analysis, ordinary and partial differential equations, topics in mathematics, mathematical modeling, real analysis*

RESEARCH AREAS

Applied and geometric analysis, differential equations, stochastic controls

RESEARCH PROJECTS

1. *Singularities of Variational Problems (1991-1993)*
2. *Conformally Invariant Variational Problems: Applied Analysis in Geometry (1993-1994)*
3. *Higher Order Differential Equations and Applications (1994-1995)*
4. *Optimal Transportation Problems (1995-1997)*
5. *Optimal Location Problems: Theory and Applications (1997-1998)*
6. *Stochastic control: Minimizing Risk with Expected Return (1998-1999)*
7. *Optimal Cumulant Control and Risk Sensitive Control (1999-2000)*
8. *Optimization of Combined Cumulants in Stochastic Control (2000-2001)*

9. *Differential and Algebraic Matrix Riccati Equations and Their Applications (2001-2002)*
10. *Method of Upper-Lower Solutions for General Riccati Equations and Hamilton-Jacobi-Bellman Equations (2002-2003)*

PROFESSIONAL SERVICE

- Organized AMS Special Session "Singularities of Geometric PDE's (No. 880, Salt Lake City, Utah, April 9-10, 1993, with N. Smale)
- Organized Postdoctoral Seminar at IMA, University of Minnesota, 1990-1991
- Refereed articles for the following mathematical journals
  Communications in Partial Differential Equations
  Computations and Mathematics with Applications
  Indiana University Journal of Mathematics
  Journal of Mathematical Analysis and Applications
  Proceedings of the American Mathematical Society
  Pacific Journal of Mathematics
- Reviewed articles for *Mathematical Reviews*
- Reviewed books for Birkhauser Publishers

UNIVERSITY SERVICE

- Served Mathematics Department Curriculum Committee, since 1996
- Served Mathematics Department Search Committee, 1999

GRANTS AND FELLOWSHIPS

- Graduate Fellowship & Wray-Todd Fellowship, 1989-1990, Rice University
- Research Grant (with P.Yang, DMS#9300881), 1993-1994, National Science Foundation
- Summer Stipend Grant, 1996-1997, Bradley University
- Research Excellence Committee Grant, 1997-1998, Bradley University
- Caterpillar Fellowship, 1998-1999, Bradley University
- Research Excellence Committee Grant, 1999-2000, Bradley University
- Caterpillar Fellowship, 2000-2001, Bradley University
- Caterpillar Fellowship, 2001-2002, Bradley University

(Some of the papers listed below are available at the website http://hilltop.bradley.edu/~mou/moupaper.html.)

PAPERS IN PROGRESS

1. S.L. Liberty & L. Mou, Existence of solutions to coupled Riccati differential equations in cumulant controls. Preprint, 2001.
2. M. McAsey & L. Mou, Differential Riccati equations in stochastic differential games. In preparation, 2002.

PAPERS SUBMITTED/ACCEPTED

1. L. Mou, A monotone method for HJB equations and Riccati equations. *Proceedings of International Congress of Chinese Mathematicians*, 2001.
2. L. Mou, Upper-lower solution method for differential Riccati equations in stochastic LQR problems. *SIAM J. on Control and Optimization, 2002*.
3. L. Mou, General algebraic and differential Riccati equations from stochastic LQR problems with infinite horizon. *SIAM J. on Control and Optimization, 2002*.

PAPERS PUBLISHED

1 S.L. Liberty & L. Mou, Estimation of Maximal Existence Intervals for Solutions to a Riccati Equation via an Upper-Lower Solution Method. *Proceedings of thirty-ninth Allerton Conference on Communication, Control, and Computing*, 2001.

2. L. Mou, S.R. Liberty, K.D. Pham & M. K. Sain, Linear cumulant control and its relationship to risk-sensitive control. *Proceedings of Thirty-Eighth Allerton Conference on Communication, Control, and Computing*, 2000.

3 L. Mou, Existence of biharmonic curves and symmetric biharmonic maps. *Proceedings of International Conference on Differential Equations and Computational Simulations*, 1999.

4. M. McAsey and L. Mou, Existence and characterization of optimal locations. *Journal of Global Optimizations*, 15, 85-104, 1999.
5. M. McAsey and L. Mou, Optimal location in mass transport. "Monge Ampere Equation: Applications to Geometry and Optimization," *Contemporary Mathematics*, Vol. 226, 1998, edited by L. Caffarelli and M. Milman, 131-148.
6. J. Highfill, M. McAsey and L. Mou, Locating a Recycling Center: The General Density Case. *International Advances in Economics Research*, Vol. 4, No. 4 (1998) 428-440.
7. J. Highfill, M. McAsey and L. Mou, The optimal location of two recycling centers in a municipal waste management model. *The Journal of Economics*, 23 (1997) 107-121.
8. L. Mou & P. Yang, Multiple solutions and regularity of H-systems. *Indiana University Mathematics Journal*, Vol. 45, No. 4 (1996) 1193-1222.
9. L. Mou & C. Wang, Bubbling phenomena of certain Palais-Smale sequences of n-harmonic type systems. *Calculus of Variations and PDE's*, Vol. 4 (1996) 341-367.
10. L. Mou & P. Yang, Regularity of n-harmonic maps. *Journal of Geometric Analysis*, Vol. 1, 6 (1996) 91-112.
11. R. Hardt, F.-H. Lin & L. Mou, Strong convergence of p-harmonic mappings. *Progress in PDE's: the Metz Surveys 3*, edited by M. Chipot, J.S.J. Paulin & I. Shafris. Longman Scientific Technical. 1994.
12. L. Mou, Removability of singular sets of harmonic maps. *Archive Rational Mechanics and Analysis*, Vol. 127, No. 3 (1994) 199-217.

13. R. Hardt & L. Mou, Harmonic maps with fixed singular sets. *Journal of Geometric Analysis,* Vol. 2, 5 (1992) 445-488.
14. L. Mou, Uniform boundary regularity estimates for minima of certain functionals. *Proc. of Symp. Pure Math. "Differential Geometry"*, ed. by R. E. Greene and S. T. Yau (1992).
15. L. Mou, Harmonic maps for bumpy metrics. *"Statistical Thermodynamics and Differential Geometry of Microstructured Material,"* IMA Vol. 51, edited by H. T. Davis and J. C. C. Nitsche (1992) 57-68.
16. L. Mou, Uniqueness of energy minimizing maps for almost all smooth boundary data. *Indiana University Mathematics Journal*, Vol. 40, 1 (1991), 363-392.
17. L. Mou, Harmonic maps with prescribed finite singularities. *Communications in Partial Differential Equations*, Vol. 14, 11 (1989), 1509-1540.
18. L. Mou, Existence of positive solutions of a class of semilinear elliptic systems. *Journal of Natural Sciences I: Mathematics*, Sichuan, 11 (1989), 100-110.
19. C. Li & L. Mou, A generalized quasi-convexity and weak lower-semicontinuity. *Acta Mathematica Scientia*, Vol. 8, 1 (1988), 55-59.

LECTURES/PRESENTATIONS

1. The International Congress of Chinese Mathematicians, Taipei, Taiwan, December 2001. A monotone method for HJB equations and Riccati equations.
2. Thirty-Eighth Allerton Conference on Communication, Control, and Computing, Allerton, IL, 2000. Linear cumulant control and its relationship to risk-sensitive control.
3. International Workshop on Number Theory, Sichuan University, July 20-24, 2000. Some connections between Riccati equations and integral matrix completion problem.
4. National Summer School for Graduate Students in Mathematics, Chengdu, China, July 10-Aug. 5. Differential inequalities and solutions to systems of Riccati type.
5. Mathematics Colloquium, Sichuan University, June 5, 1999. Stochastic differential equations and their applications.
6. International Conference on Differential Equations and Computational Simulations, Chengdu, China, June 13-18, 1999. Stochastic control with constraints.
7. International Conference on Nonlinear PDE's, Northwestern University, IL, March 1998. Existence of axially symmetric biharmonic maps.
8. AMS Meeting #927, Special Session on Differential Geometry, Miwaukee, Oct. 24-25, 1997. An optimal path problem.
9. NSF-CBMS Conference 1997on Monge-Ampere Equations and Applications to Optimization and Geometry, Florida Atlantic University. Optimal destinations of mass transport
10. Mathematical Colloquium, Sichuan Union University, June 5, 1997. Recent results on transport problems.
11. Mathematical Colloquium, Zhongshan University, May 22, 1997. An optimization problem and applications.
12. Applied Mathematics Seminar, University of British-Columbia, Vancouver, May 20, 1997. Optimal mass transport problems.
13. Colloquium, University of Iowa, Iowa City, November 14, 1996. Optimal transport problems.

14. AMS Meeting #914, Special Session on Partial Differential Equations in Geometry, Rider University, Oct. 5-6, 1996. Biharmonic equations.
15. Differential Geometry Seminar, University of Illinois, Urbana-Champaign, February 20, 1996. Biharmonic maps: models, results and applications
16. Mathematics Colloquium, Eastern Michigan University, Ypsilanti, March 12, 1996. Unification of modern geometry: an analytic approach
17. Midwest Geometry Conference, University of Oklahoma Norman , May 10-12, 1996. Maps with least total Hessian
18. Mathematics Colloquium, University of Florida, Gainsville, November 27, 1995. Higher order differential equations.
19. Mathematics Colloquium, Rice University, Houston, June 22, 1995. Optimal maximum norm estimates of Sobolev functions.
20. Mathematics Colloquium, McMaster University, Hamilton, Canada, February 14, 1995. Harmonic map equations.
21. Mathematics Colloquium, University of Tennessee, Knoxville, February 2, 1995. Harmonic maps and harmonic type equations.
22. Iowa State and University of Iowa PDE Conference, Ames, Iowa February 1994. Regularity of n-harmonic type systems.
23. Joint Summer Research Conference in Mathematical Sciences on Curvature Equations and Conformal Geometry, Seattle, Washington, July 10-16, 1993. Critical points of conformally invariant energy functionals.
24. NSF-CBMS Regional Research Conference in Mathematical Sciences on Compensated Compactness, Homogenization and H-Measures, Santa Cruz, California, June 27-July 1, 1993. Convergence of n-Harmonic maps.
25. Mathematics Colloquium, Texas A&M University, March 11, 1993. Regularity of harmonic maps of constant volumes.
26. Mathematics Colloquium, University of Oklahoma, December 3, 1992. Regularity and existence of harmonic maps with prescribed volumes.
27. Mathematics Colloquium, Claremont Graduate School, December 2, 1992. The Plateau problems.
28. World Congress of Nonlinear Analysts, Tampa, Florida, August 19-26, 1992. Quasilinear elliptic systems with singular solutions.
29. Geometric Analysis Seminar, Rice University, April 17, 1992. Removable Singular sets of p-harmonic maps.
30. AMS Meeting #873, Special Session on Partial Differential Equations, Springfield, Missouri, March 20-21, 1992. Removable singular sets of solutions to variational problems.
31. AMS Meeting #867, Special Session on Variational Methods, Differential Analysis and Symmetry, Bangor, Maine, August 8-10, 1991. Singularities of solutions to some variational problems.
32. Mathematics Colloquium, Rice University, January 31, 1991. Harmonic mappings with fixed singularities.
33. IMA Workshop on Statistical Thermodynamics and Differential Geometry of Microstructured Material, IMA, University of Minnesota, January 21-25, 1991. Harmonic maps for bumpy metrics.
34. Summer Institute on Differential Geometry, UCLA, July 8-14, 1990. Uniform boundary regularity estimates for minima of quadratic functionals.
35. International Conference on Differential Equations and Mathematical Physics, University of Alabama at Birmingham, March 15-21, 1990. Generic uniqueness of minimizing harmonic maps.