

Curriculum Vita

Congming Li

GENERAL INFORMATION

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FIELD OF RESEARCH

Nonlinear Partial Differential Equations, Calculus of variations,
Differential Geometry, Nonlinear Analysis

EDUCATION

1985 -1989 **Courant Institute, New York University, New York**
Ph.D. in Mathematics
Thesis Advisor: **Louis Nirenberg**

1984 -1984 **Institute of System Sciences, Academia Sinica, Beijing**
M.S. in Mathematics

1978 -1982 **University of Science and Technology of China, Hefei**
B.S. in Mathematics

EMPLOYMENTS

1999 -Present **University of Colorado, Boulder**
Associate Professor

1992 - 1999 **University of Colorado, Boulder**
Assistant Professor

1991 - 1992 **Institute for Advanced Study, Princeton**
Visiting member

1989 - 1991 **University of Pennsylvania, Philadelphia**
Rademacher Instructorship

GRANTS and AWARDS

1990 - 1992 NSF Grant DMS-9003694. PI

1993 Junior Faculty Award, CRCW at CU Boulder. PI

1994 - 1996 NSF Grant DMS-9401441. PI

1995 National Natural Sciences Foundation of China, 19471082. Co-PI

1996 - 1999 NSF Grant DMS-9623390. PI

1998 AMS-NSF travel grant to ICM. Special Grant

1998 Summer Session Research Grant, CRCW at CU Boulder. PI

1998 Curriculum Development for Cal. III, ATLAS of CU Boulder. Co-PI

1999 - 2002 NSF Grant DMS-9970530. PI

INVITED PRESENTATIONS at PROFESSIONAL CONFERENCES

1. *Summer 1990*,
American Math. Society's Summer Institute on Differential Geometry at UCLA
2. *Spring 1991*,
Differential Equations Conference at Utah State University
3. *Summer, 1992*,
873rd Meeting of American Math. Society at Southwest State University of Missouri.
4. *Summer 1993*,
Joint Summer Research Conferences in the Mathematical Sciences at Washington University.
5. *Summer 1994*,
Iowa Partial Differential Equations Conference at University of Iowa.
6. *Spring 1995*,
Conference on "Qualitative Aspects of Partial Differential Equations", Mathematisches Forschungsinstitut Oberwolfach, Germany.
7. *Spring 1995*,
Conference on Mathematical Modeling and Analysis of Superconductivity at SuZhou University.
8. *Fall 1995*,
905th Meeting of American Math. Society at University of Southern California.
9. *Summer 1996*,
International Conference on Dynamics and Differential Equations, Springfield, MO.
10. *Summer 1997*,
The First Tianyuan Conference of Mathematical Sciences, Berkeley, CA.
11. *Spring 1998*,
Conference on "Geometric Questions in Partial Differential Equations", Mathematisches Forschungsinstitut Oberwolfach, Germany.
12. *Summer 2000*,
Y2k International Conference on Dynamics and Differential Equations, Kennesaw State University, Atlanta, Georgia
13. *Fall 2001*,
970th Meeting of American Math. Society at Chattanooga, Tennessee
14. *Summer 2002*,

Workshop on Nonlinear Analysis of Partial Differential Equations, Tonji Univ., ShangHai, China

15. *Summer 2004,*

Workshop on new developments on variational methods and their applications, Pacific Institute for the Mathematical Sciences, Banff International Research Station, Canada.

16. *Summer 2004,*

Fifth International Conference on Dynamical Systems and Differential Equations, California State Polytechnic University, Pomona, California

INVITED LECTURES at MATHEMATICAL INSTITUTIONS

1. *Spring, 1990,*

Colloquium, Dept. of Math., Univ. of Pennsylvania

2. *Spring, 1991,*

Colloquium, School of Math., Georgia Inst. of Tech.

3. *Spring, 1991*

Colloquium, Dept. of Math., Univ. of Oklahoma

4. *Spring, 1991,*

Colloquium, Prog. of Appl. Math., Univ. of Colorado at Boulder.

5. *Spring, 1991,*

Colloquium, Dept. of Math., Univ. of Tennessee.

6. *Spring, 1991,*

Colloquium, Dept. of Math. Oklahoma State Univ.

7. *Fall, 1991,*

Analysis Seminar, Dept. of Math., Princeton Univ.

8. *Spring, 1992,*

Analysis Seminar, School of Math., Institute for Advanced Study.

9. *Spring, 1992,*

Colloquium, School of Math., Univ. of Minnesota.

10. *Spring, 1995,*

May, 23, Dept. of Math. HongKong Univ. of Sci. & Tech.

11. *Summer, 1995,*

Institute of System Sciences, Academia Sinica.

12. *Summer, 1995,*

Institute of Applied Mathematics, Academia Sinica.

13. *Summer, 1995,*
Dept. of Math. Graduate School of the Academia Sinica.
14. *Summer, 1995,*
Dept. of Math. XuZhou Normal University.
15. *Summer, 1995,*
Institute of Mathematical Science, ZheJiang University.
16. *Fall, 1995,*
Dept. of Math. University of Wyoming.
17. *Fall, 1995,*
Program in Applied Math, Univ. of Colorado at Boulder.
18. *Fall, 1995,*
Courant Institute of Mathematical Sciences, New York University.
19. *Spring, 1996,*
Dept. of Math., Utah State University.
20. *Spring, 1996,*
Dept. of Math., Rutgers University.
21. *Fall, 1996,*
Dept. of Math., Univ. of California, Los Angeles.
22. *Spring, 1997,*
Dept. of Math., Univ. of Wyoming.
23. *Summer, 1997,*
Dept. of Math., Univ. of California, Los Angeles.
24. *Summer, 1997,*
Dept. of Math., Univ. of British Columbia.
25. *Fall, 1997,*
Dept. of Math., Univ. of Colorado at Boulder.
26. *August, 1999,*
Institute of System Sciences, Academic Sinica, Beijing, China.
27. *August, 1999,*
ShanXi Normal Univ. Linfeng, China.

28. *October, 1999,*
National Center of Theoretical Science, Taiwan.
29. *November, 1999,*
National Univ. of Taiwan, Taipei, Republic of China.
30. *November, 1999,*
Hong Kong Univ. of Science and Technology, HongKong, China.
31. *October, 2000,*
Dept. of Math., Univ. of Colorado at Boulder.
32. *Fall, 2001,*
Dept. of Math., Univ. of Tennessee at Knoxville.
33. *Fall, 2001,*
Dept. of Math., Vanderbilt Univ. Vanderbilt, Tennessee.
34. *July, 2002,*
Graduate School, Academic Sinica, Beijing, China.
35. *August, 2002,*
Institute of System Sciences, Academic Sinica, Beijing, China.
36. *October, 2003,*
Colloquim, University of Oklahoma, Norman, Oklahoma.
37. *November, 2003,*
Analysis seminar, University of Oklahoma, Norman, Oklahoma.
38. *December, 2003,*
Colloquim, University of Toledo, Toledo, Ohio.

Past and Current Students Involved with my Research:

1. Eric Wright, PhD, 2002.
2. Chao Jin, completed all preliminary examinations, comprehensive planed in Fall 2004.
3. JiSun Lim, completed all preliminary examinations, comprehensive planed in Fall 2004 or Spring 2005.
4. Santhosh Heddese, PhD candidates, part time student.

5. Irene Yun-Hsin Liu, Research Experience for Undergraduate Students. 1998-1999

TEACHING

1. New Courses Developed:

APPM 7400, Some Methods in Nonlinear PDE. (with J. Bebernes)

APPM 7900, The Sobolev Spaces and Some Applications.

Seminar, Mathematical Finance.

Seminar, Stochastic Differential Equations.

Seminar, Qualitative Analysis of Linear and Nonlinear Partial Differential Equations. (This was started with Eric Wright's independent study from 1999, reformed in 2003 with the independent study of Chao Jin and Jisun Lim. It was officially introduced as a course in Spring 2004 as a voluntary work. It will be taught in Fall 2004.

2. Major Revision of Existing Courses

APPM 5440, Applied Analysis I, and APPM 5450, Applied Analysis II.

Completely redesigned these core courses for our graduate program.

APPM 2360, Introduction to Linear Algebra and Differential Equations.

Introduced lab. and computational projects into this large undergraduate core course (in assistance to J. Curry and J. Meiss).

APPM 2350, Calculus I for Engineers, and APPM 1350, Calculus III for Engineers.

Introduced computational projects via internet to these two large undergraduate core courses (with J. Curry and S. Herod).

Course Coordinator for large group of class for Calculus I (APPM 1350), II (APPM 1360), and III (APPM2350), for Engineers and Introduction to Linear Algebra and Differential Equations (APPM 2360).

PROFESSIONAL SOCIETY / SERVICES

- 1 Member of American Mathematical Society.
- 2 Panel member for National Science Foundations, Spring 2004.
- 3 Referee for National Science Foundations.
- 4 Editor, Communications on Pure and Applied Analysis, 2003-present
- 5 Referee for The Following Journals:
- 6 American Journal of Mathematics
Calculus of Variation and Partial Differential Equations
Communications in Partial Differential Equations

Communications on Pure and Applied Analysis
Communications on Pure and Applied Mathematics
Duke Mathematical Journal
Dynamic Systems and Differential Equations
Indiana University Mathematical Journal
Journal of Differential Equations
Journal of The American Mathematical Society
Journal of Statistical Physics
Methods and Applications of Analysis
Pacific Journal of Mathematics
Proceedings of The American Mathematical Society
Rocky Mountain Journal of Mathematics
SIAM Journal for Mathematical Analysis

- 7 Co-Chair, Special Session on Nonlinear Partial Differential Equations, International Conference on Dynamical Systems and Differential Equations, 1997.
- 8 Chair, Session of Short Communications on Partial Differential Equations From Differential Geometry,
- 9 International Congress of Mathematician, 1998.
- 10 Co-Chair, Special Session on Qualitative Study of Nonlinear Partial Differential Equations, Y2K International Conference on Dynamical Systems and Differential Equations, 2000.

UNIVERSITIES SERVICIES

- 1 Member: Education Committee, College of Engineering and Applied Science, Spring 1995
- 2 Member: Graduate Committee, Department of Applied Mathematics, 1994-2003
- 3 Member: Undergraduate Committee, Department of Applied Mathematics, 1993-1995
- 4 Chair: Diversity Committee, Department of Applied Mathematics, 2002-Present
- 5 Chair: Colloquium Committee, Department of Applied Mathematics, 2003-Present

PREPRINT

1. C. Jin, C. Li, Symmetry of Solutions to Some Systems of Integral Equations
2. Wenxiong Chen, Congming Li, and Biao Ou, "Classification of Solutions for a System of Integral Equations"
3. Wenxiong Chen, Congming Li, and Biao Ou, "Qualitative Properties of Solutions for an Integral Equation"
4. Wenxiong Chen, Congming Li, and Biao Ou, "Classification of Solutions for an Integral Equation"

5. W. Chen, Congming, Li, and E. Wright, "On a nonlinear parabolic system-modelling chemical reactions in rivers"

PUBLICATIONS

1. W.Chen, C. Li: Regularity of Solutions for a System of Integral Equations, to appear, *Comm. Pure & Appl. Anal.*
2. W. Chen, C. Li, "Gaussian curvature in negative case", *Proc. Amer. Math. Soc.*, 131(2003) 741-744
3. E. Wright, C. Li, "Global existence of solutions to reaction diffusion system based upon carbonate reaction kinetics", *Comm. Pure & Appl. Anal.*, 1(2002) 77-84
4. E. Wright, C. Li, "Modeling chemical reactions in riveres: a three component reaction", *Disc. & Cont. Dynamics Sys.*,7(2001) 377-384.
5. W. Chen, C. Li, "Prescribing scalar curvature on S^n ", *Pac. J. Math.*, 199(2001) 61-78.
6. W. Chen, C. Li, Harmonic maps on complete manifolds, *Disc. & Cont. Dynamics Sys.*, 5(1999) 799-804.
7. J. Bebernes, C. Li, P. Talaga, Single-point blowup for nonlocal parabolic problems, *Physical D*, 134(1999) 48-60.
8. W. Chen, C. Li, Some new approaches in prescribing Gaussian and scalar curvatures, *Disc. & Cont. Dynamics Sys.*, Special Volume, 1998, 148-159.
9. W. Chen, C. Li, Indefinite elliptic problems with critical exponent, *Advances in Nonlinear PDE and related Areas*, *World Scientific*, 1998, 67-80.
10. W. Chen, C. Li, A priori estimates for prescribing scalar curvature equations, *Ann. of Math.*, 145(1997) 547-564.
11. W. Chen, C. Li, Indefinite elliptic problems in a domain, *Disc. & Cont. Dynamics Sys.*, 3(1997) 333-340.
12. J. Bebernes, C. Li, Y. Li, Travelling fronts in cylinders and their stability, *Rocky Mountain J. Math.*, 27(1997) 123-150.
13. C. Li, Local asymptotic symmetry of singular solutions to nonlinear elliptic equations, *Invent. Math.*,123(1996) 221-231.
14. W. Chen, C. Li, What kinds of singular surfaces can admit constant curvature, *Duke Math. J.*, 78(1995) 437-451.
15. W. Chen, C. Li, A note on the Kazdan-Warner type conditions, *J. Diff. Geom.*, 41(1995) 259-268.
16. W. Chen, C. Li, A necessary and sufficient condition for the Nirenberg problem, *Comm. Pure Appl. Math.*, 48(1995) 657-667.
17. C. Li, Y. Li, Nonautonomous nonlinear scalar field equations in R^2 , *J. Differential*

- Equations*, 103(1993) 421-430.
18. W. Chen, C. Li, A priori estimates for solutions to some nonlinear elliptic equations in R^2 , *Arch. Rational Mech. Anal.*, 122(1993) 145-157.
 19. W. Chen, C. Li, Qualitative properties of solutions to some nonlinear elliptic equations in R^2 , *Duke Math. J.*, 71(1993) 427-439.
 20. W. Chen, C. Li, Prescribing Gaussian curvature on singular surfaces, *J. Geom. Anal.*, 3(1993) 315-334.
 21. W. Chen, C. Li, Classification of solutions of some nonlinear elliptic equations, *Duke Math. J.*, 63(1991) 615-622
 22. C. Li, Monotonicity and symmetry of solutions of fully nonlinear elliptic equations on bounded domains, *Comm. in Partial Differential Equations*, 16(1991) 491-529.
 23. W. Chen, C. Li, Prescribing Gaussian curvatures on surfaces with conical singularities, *J. Geom. Anal.*, 1(1991) 359-372.
 24. A. Greenbaum, Z. Han, C. Li, Comparison of linear system solvers applied to diffusion-type finite element equations, *Numer. Math.*, 56(1989) 529-546.
 25. A. Greenbaum, Z. Han, C. Li, Parallelizing preconditioned conjugate gradient algorithms, *Comput. Phys. Comm.*, 53(1989) 295-309.
 26. C. Li, Some qualitative properties of fully nonlinear elliptic and parabolic equations, Dissertation, New York University, 1989.
 27. C. Li, Global properties of the solutions of nonlinear Schrödinger equations on a bounded domain, *J. System Sci. Math. Sci.*, 4(1984) 160-164.