

ZIQI SUN

Professor of Mathematics and Interim Chairperson

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EDUCATION

1987 PhD, Mathematics, University of California at Los Angeles
1985 M.S, Mathematics, University of California at Los Angeles
1982 B.S, Mathematics, University of Science and Technology, China

PROFESSIONAL APPOINTMENTS

2019-Present Interim Chair
2017-2019 Graduate Coordinator
1997-Present Professor, Wichita State University
1998 Visiting Professor, University of Washington
1992-1997 Associate Professor, Wichita State University
1990-1992 Assistant Professor, Wichita State University
1987-1990 Assistant Professor, University of Washington

AREAS OF RESEARCH

Partial Differential Equations
Differential Geometry
Inverse Problems

RESEARCH GRANTS

1990-1991 NSF DMS-9015621 Classical Analysis, PI
1992-1994 NSF DMS-9123742 Classical Analysis, PI
1995-1997 NSF DMS-9501401 Classical Analysis, PI
2004-2008 Research Grant from Fudan University

PhD STUDENTS

Feng Qiu Inverse Problems for Linear and Semilinear Elliptic Partial Differential Equations of the Schrodinger Type, 1998.

David Hervas An Inverse Boundary Value Problem for a Quasilinear Elliptic Differential Equation, 2001

PUBLICATIONS

- Some special properties of umbilic submanifolds of Riemannian manifolds with constant curvatures, *J. Univ. Sci. Tech. Chin.*, 14 (2), (1984), 187-194.
- Submanifolds with constant mean curvature in spheres, *Adv. in Math. (Beijing)*, 16 (1), (1987), 91-96.
- On complete hypersurfaces in with constant scalar curvature, *Chin. Ann. of Math., Ser. A8* (1987), No.1, 1-8.
- On compact hypersurfaces in with constant scalar curvature, *Chin. Ann. Of Math., Ser. A8* (1987), No.3, 273-286.
- On the uniqueness for a multidimensional hyperbolic inverse problem, *Comm. in PDE*, 13 (10), (1988), 1189-1208.
- On an inverse boundary value problem in two dimensions, *Comm. in PDE*, 14 (8&9), (1989), 1101-1113.
- On the continuous dependence for an inverse initial boundary value problem, *J. Math. Anal. and Appl.* 150 (1), (1990), 188-204.
- The inverse conductivity problem in two dimensions, *J. Diff. Equations*, 87 (2), (1990), 227-255.
- Generic uniqueness for an inverse boundary value problem, *Duke Math. J.*, 62 (1), (1991), 131-155. (with G. Uhlmann)
- Uniqueness for formally determined inverse boundary value problems, *Comp. Math. Applic.*, 22 (4/5), (1991), 67-80.
- Generic uniqueness for formally determined inverse problems, *Inverse Problems in Engineering Sciences, ICM-90 Satellite Conf. Proc.*, Springer- Verlag, 145-152. (with G. Uhlmann)
- An inverse boundary value problem for Schrodinger operators with vector potentials, (1991), *Trans. of AMS*, 338 (2), (1993), 953-969.
- An inverse boundary value problem for Maxwell's equations, *Archive Rat. Mech. Anal.*, 119, (1992), 71-93. (with G. Uhlmann)
- Stability estimates for hyperbolic inverse problems with local boundary data, *Inverse Problems*, 8, (1992), 193-206. (with V. Isakov)
- Inverse scattering for singular potentials in two dimensions, *Trans. of AMS*, 338 (1), (1993), 363-374. (with G. Uhlmann)
- An inverse boundary value problem for Schrodinger operators with vector potentials in two dimensions, *Comm. in PDE*, 18 (1&2), (1993), 83-124.

- Recovery of singularities for formally determined inverse problems, *Comm. in Math. Physics*, 153, (1993), 431-445. (with G. Uhlmann)
- Inverse boundary value problems for Schrodinger operators, *Inverse Problems in Mathematical Physics, Lecture Notes in Physics*, 422, (1993), Springer-Verlag, 216-230.
- An inverse boundary value problem for St. Venant-Kirchhoff's materials, *Inverse Problems*, 10 (1994), 1159-1163. (with G. Nakamura)
- A global identifiability theorem for the Schrodinger equation in magnetic field, *Math. Ann.*, 303 (1995), 377-388. (with G. Nakamura and G. Uhlmann)
- The inverse scattering at fixed energies in two dimensions, *Indiana Univ. Math. Journal*, 44 (3), (1995), 883-896. (with V. Isakov)
- On a quasilinear inverse boundary value problem, *Math. Z.*, 221 (2), (1996), 293-305.
- Electrical impedance tomography in nonlinear materials, *Journées "Equations aux Derivées Partielles" (Saint-Jean-de-Monts, 1996)*, Exp. No. XIV, 11pp., Ecole Polytech., Palaiseau, 1996. (with G. Uhlmann)
- Inverse problems in quasilinear anisotropic medium, *Amer. Journal of Math.* 19 (40), (1997), 771-797. (with G. Uhlmann)
- Inverse boundary value problems for nonlinear elasticity, *Inverse Problems in Engineering Sciences, Proc. of IPES*, (1999), Springer-Verlag. (with G. Nakamura)
- An inverse boundary value problem for quasilinear elliptic equations. *Comm. in PDE*, 27 (2002), 11&12, 2449-2490. (with D. Hervas)
- An inverse problem for inhomogeneous conformal Killing field equations, *Proc. Amer. Math. Soc.* 131 (2003), 1583-1590.
- Anisotropic inverse problems in two dimensions, *Inverse Problems*, 19 (2003) 1001-1010. (with Gunther Uhlmann)
- A pinching theorem on submanifolds with parallel mean curvature vectors, *Colloquium Mathematicum*, 98 (2), (2003), 189-199.
- Inverse boundary value problems for a class of semilinear elliptic equations, *Advances in Applied Mathematics*, 32 (4), (2004), 791-800.
- Note on exponentially growing solutions to the Schrodinger equations, *Communications in Applied Math*, 9 (2005), 327-336.
- Conjectures in inverse boundary value problems for quasilinear elliptic equations, *CUBO Journal*, 7 (3), (2005), 65-73.
- Anisotropic inverse problems for quasilinear elliptic equations, *Journal of Physics*, 12 (2005), 156-164.

- Inverse boundary value problems for elliptic equations, *Advances in Mathematics and Its Applications*, USTC, (2008), 149-171.
- An inverse boundary value problem for semilinear elliptic equations, *Electron. J. Diff. Equ.*, Vol. 2010 (2010), No. 37, 1-5.
- A Method for searching for prime pairs in the Goldbach conjecture, *International J. Math & Comp.* 10 (2015), No 2, 115-126. (with W. Zeng)
- Stability theorems for an inverse problem for inhomogeneous conformal Killing field equations, to be submitted.
- Inverse problems with the conformal Killing field equations in higher dimensions. In preparation.
- Conformal geometry and inverse problems. In preparation.

INVITED PRESENTATIONS

- On the conductivity problems in two dimensions, Joint Summer Research Conf. Acata, August 1989.
- Generic uniqueness for determined inverse problems, International Symposium on Inverse Problems in Engineering Science, Osaka, Japan, August 1990.
- Recent progress on the inverse boundary value problems, Symposium on Inverse Problems, Tokyo University, Tokyo, Japan, August 1990.
- Inverse scattering for singular potentials in two dimensions, International Conference on Inverse Problems Computational Algorithms, Texas A&M, March 1991.
- On an inverse boundary value problem in two dimensions, AMS Conf., Special Session on "Inverse Problems in PDE", Manhattan, March 1990.
- Inverse scattering for Schro" dinger operators with magnetic potentials, AMS Conf., Special Session on "Inverse Problems and Applications", Portland, June 1991.
- Some topics in inverse boundary value problems, Lapland Conference on Inverse Problems, Inari, Finland, June 1992.
- Electromagnetic inverse problems, SIAM 40th Anniversary Meeting, Minisymposium (organized jointly with Victor Isakov) on Inverse Coefficient Problems for Systems, Los Angeles, June 1992.
- Semilinear inverse boundary value problems, 23rd AMS-SIAM Summer Seminar on Tomography, Impedance Imaging and Integral Geometry, South Hadley, Massachusetts, June 1993.
- Inverse scattering at fixed energies in two dimensions, International Conference on Inverse Problems: Principal and Applications in Geophysics, Technology and Medicine, Potsdam, Germany, August 1993.

- Quasilinear inverse boundary value problems, the Second International Symposium on Inverse Problems in Engineering Sciences, Osaka, Japan, August 1994.
- The Dirichlet to Neumann map and the scattering theory, the 23rd Annual Midwestern Differential Equations Conference, Special Session on Inverse Problems, Norman, October 1994.
- Inverse boundary value problems in quasilinear anisotropic medium, AMS Summer Research Conference on Electrical Impedance Tomography, Seattle, July 1995.
- Dirichlet to Neumann maps and conformal deformations, AMS conf. Special Session on "Analysis and Geometry", Detroit, May 1997.
- Inverse boundary value problems for nonlinear equations, UAB-GIT '99 Conference, Birmingham, March 1999.
- Inverse boundary value problems for quasilinear elliptic equations, AMS conf, Special Session on "Geometric properties of PDE's", Providence, October 1999.
- Pan-American Advanced Study Institute Workshop on Inverse Problems, MSRI, Oct-Nov, 2001.
- Anisotropic inverse problems in two dimensions, AMS conf., Special Session on "Inverse Problems and Tomography," Binghamton, October 2003.
- Conjectures in inverse boundary value problems for quasilinear elliptic equations, The Second International Conference on Inverse Problems, Shanghai, June 2004.
- Developments in inverse boundary value problems for quasilinear elliptic equations, Joint Mathematics meetings, AMS-SIAM Special Session on "Theoretical and Computational Aspects of Inverse Problems," Atlanta, January 2005.
- Method and Ideas in inverse boundary value problems for elliptic equations, Invited lecture, Differential Geometry/PDE Seminar, USTC, June 2007.
- Inverse boundary value problems for quasilinear elliptic equations, Invited Lecture, Applied Math Seminar, Fudan University, June 2007.
- Inverse boundary value problems for quasilinear elliptic equations, Invited Lecture, Applied Math Seminar, September 2007.
- Developments in inverse boundary value problems in two dimensions, invited lecture, Joint Differential Geometry, PDE, and Inverse Problem Seminar, University of Washington, October 2007.