# **BIOGRAPHICAL SKETCH**

NAME:Steven D. TaliaferroDATE OF BIRTH:April 4, 1949PLACE OF BIRTH:Honolulu, HawaiiMARITAL STATUS:Married, three children

## CURRENT OFFICE AND E-MAIL ADDRESSES

Department of Mathematics Texas A&M University College Station, TX 77843-3368

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#### CITIZENSHIP

U.S.

## IN THE PROFESSION

1982 - present	Associate Professor of Mathematics, Texas A&M University, College Station, TX 77843-3368
1983 - 1984	Research Fellowship from the Alexander von Humboldt Foundation and Faculty Academic Study Leave, Institut für Mechanik, Technische Universität, Darmstadt, Germany.
1976 - 1982	Assistant Professor of Mathematics, Texas A&M University, College Station, TX 77843-3368
1972 - 1976	Teaching Assistant, Stanford University

## DEGREES

Ph.D. in Mathematics with a minor in Computer Science from Stanford University, 1976.

B.A. in Mathematics from San Diego State University, 1971.

## SOCIETY MEMBERSHIPS

American Mathematical Society

#### **INVITED LECTURES**

Institut für Mechanik, Technische Universität, Darmstadt, Germany

Mathematics Department, Universität Augsburg, Augsburg, Germany

Mathematics Department, University of Trento, Trento, Italy

Mathematics Department, Technische Universität, Darmstadt, Germany

November 1990, Special Session on Geometric Inequalities and Convex Bodies, American Mathematical Society, Denton, Texas (20 minutes).

January 1994, Special Session on Singular Boundary Value Problems, American Mathematical Society, Cincinnati, Ohio (20 minutes).

March 1995, Special Session on Nonlinear Boundary Value Problems, American Mathematical Society, Hartford, Connecticut (20 minutes).

May 1996, International Conference on Dynamical Systems and Differential Equations, Springfield, Missouri (45 minutes).

August 1997, International Colloquium on Differential Equations, Plovdiv, Bulgaria (one hour).

August 1998, International Colloquium on Differential Equations, Plovdiv, Bulgaria (one hour).

May 2000, Y2K International Conference on Dynamical Systems and Differential Equations,

Kennesaw GA, (30 minutes).

May 2001, Conference on Differential Equations and Computational Simulations, Mississippi State University, (20 minutes).

June 2001, three one-hour lectures in Perugia, Italy.

June 2001, University of Rome Tor Vergata, Rome, Italy.

September 2003, Rutgers University, New Brunswick, NJ.

June 2004, Fifth International Conference on Dynamical Systems and Differential Equations, California State Polytechnic University, Pomona CA, (20 minutes).

October 2005, Special Session on Analysis of Partial Differential and Integral Equations, American Mathematical Society, Lincoln NE (20 minutes).

November 2005, Conference on Partial Differential Equations and Applications, University of Florida, (35 minutes).

April 2006, Special Session on Qualitative Analysis of Partial Differential Equations, American Mathematical Society, Miami, FL (20 minutes).

July 2006, San Diego State University, San Diego, CA.

May 2008, Seventh International Conference on Dynamical Systems and Differential Equations, University of Texas at Arlington, (45 minutes).

July 2009, PLENARY TALK, 12th Equadiff Conference, Masaryk University, Brno, Czech Republic (60 minutes).

May 2010, Eighth AIMS Conference on Dynamical Systems, Differential Equations, and Applications, Dresden, Germany (30 minutes).

July 2012, Ninth AIMS Conference on Dynamical Systems, Differential Equations, and Applications, Orlando, FL (30 minutes).

December 2013, University of Missouri, Columbia MO.

May 2017, Special Session on Common Threads to Nonlinear Elliptic Equations and Systems, American Mathematical Society, New York, NY (20 minutes).

November 2017, Special Session on Nonlinear Elliptic Differential and Integral Equations, American Mathematical Society, University of California, Riverside, CA (20 minutes).

## JOURNALS REFEREED FOR

Advances in Mathematics

Duke Mathematics Journal

Mathematische Annalen

Journal of Functional Analysis

Archive for Rational Mechanics and Analysis Journal of Differential Equations Communications in Partial Differential Equations C. R. Acad. Sci. Paris Ser. I Math. Journal d'Analyse Mathematique SIAM Journal for Mathematical Analysis Proceedings of the American Mathematical Society Journal de Mathématiques Pures et Appliquées Zeitschrift für angewandte Mathematik und Physik Proceedings of the Royal Society of Edinburgh Calculus of Variations and Partial Differential Equations Nonlinear Analysis Discrete and Continuous Dynamical Systems Complex Variables and Elliptic Equations Communications in Contemporary Mathematics Electronic Journal of Differential Equations Journal of Mathematical Analysis and Applications Journal of Nonlinear Analysis: Theory, Methods, and Applications Canadian Mathematical Bulletin Monatsheft fur Mathematik Houston Journal of Mathematics Annales de l'Institut Fourier Applicable Analysis International Journal of Nonlinear Mechanics Glasnik Matematicki International Journal of Mathematics and Mathematical Sciences **AIMS Mathematics** Communications in Applied Analysis Mathematical and Computer Modelling Indian Journal of Pure and Applied Mathematics

Computers and Mathematics with Applications

Discrete Dynamics in Nature and Society

Journal of Function Spaces

Indian Journal of Mathematics

# **POST-DOCS MENTORED**

Lei Zhang, 2001-2004.

## SERVICE

- $\star$  Engineering Mathematics Textbook Committee: I made up the syllabus for the 7th edition of Thomas and Finney.
- ★ Final editing of Professor Bakelman's book Convex Analysis and Nonlinear Geometric Elliptic Equations published by Springer-Verlag in 1994. This included shortening the book by about 200 pages and the time consuming task of inserting reference numbers throughout the remaining 600 pages of text.
- $\star$  Chairman of the ad hoc committee to organize the Symposium in Memory of Ilya Bakelman held in October, 1993.
- $\star$  Member of the P&T Subcommittee, 1993 and 1994.
- \* Graduate Student Advisor 1992, 1993, 1994, 1995, 1996, 1997, 1998.
- $\star$  Member of Hiring Committee, 92-93.
- $\star$  Member of the Math 152 Common Exam Committee, Fall 94.
- ★ Edited with Stephen Fulling and Irene Bakelman the following volume which was essentially the proceedings of the Bakelman conference: A Tribute to Ilya Bakelman, Discourses in Mathematics and its Applications, No 3, Department of Mathematics, Texas A&M University, 1994.
- $\star$  Reviewed two chapters of a new manuscript on ordinary differential equations for Prentice Hall Publishing Company.
- $\star$  Member, Faculty Senate, February 1996–May 1997.
- \* Member, Personnel and Welfare Committee of the Faculty Senate.
- $\star$  Member, International Programs Subcommittee of the Faculty Senate.
- \* Member, International Programs Enhancement and Coordination Committee's Workgroup on Visiting International Scholars and Faculty Sponsors.
- \* Reviewed for Gordon and Breach Publishing Group a new journal proposal entitled International Journal of Regular and Chaotic Dynamics edited by Professor V.V. Koslov of Moscow State University.

- $\star$  Member of the P&T Subcommittee, 1997 and 1998.
- \* Member and Secretary, Faculty Advisory Council of the College of Science, 2000–2003.
- $\star$  Member of the Teaching Committee, 2006–2008.
- $\star$  Member of the Awards Committee, 2009–2011.
- $\star$  Member of Subcommittee T, 2014–2016.
- $\star$  Member of the Teaching Committee, 2015–2018.
- $\star$  Member of the Teaching Committee, 2020–2021.

#### Grants

College of Science Research Grant, Summer 1980.

#### PUBLICATIONS

#### Papers

- 1. S. Taliaferro, Asymptotic behavior of solutions of  $y'' = \phi(t)y^{\lambda}$ , J. Math. Anal. Appl. **66** (1978), 95–134.
- 2. S. Taliaferro, On the positive solutions of  $y'' + \phi(t)y^{-\lambda} = 0$ , Nonlinear Anal. 2 (1978), 437–446.
- A. Nachman and S. Taliaferro, Mass transfer into boundary layers for power law fluids, Proc. Roy. Soc. London Ser. A. 365 (1979), 313–326.
- S. Taliaferro, A nonlinear singular boundary value problem, Nonlinear Anal. 3 (1979), 897–904.
- S. Taliaferro, On the angular variation of solutions of second order linear systems, SIAM J. Math. Anal. 11 (1980), 173–180.
- S. Taliaferro, Stability for two dimensional analytic potentials, J. Differential Equations 35 (1980), 248–265.
- S. Taliaferro, An inversion of the Lagrange-Dirichlet stability theorem, Arch. Rational Mech. Anal. 73 (1980), 183–190.
- 8. S. Taliaferro, Asymptotic behavior of solutions of  $y'' = \phi(t)f(y)$ , SIAM J. Math. Anal. 12 (1981), 853–865.
- S. Taliaferro, Stability of solutions bifurcating from multiple eigenvalues, J. Funct. Anal. 44 (1981), 24–49.
- J. Buckmaster, A. Nachman, and S. Taliaferro, The fast-time instability of diffusion flames, Phys. D 9 (1983), 408–424.

- 11. S. Taliaferro, Stability and bifurcation of equilibrium solutions of reaction-diffusion equations on an infinite space interval, J. Differential Equations 54 (1984), 19–59.
- S. Taliaferro, Bifurcation at multiple eigenvalues and stability of bifurcating solutions, J. Funct. Anal. 55 (1984), 247–275.
- 13. S. Taliaferro, Degenerate Hopf bifurcation from multiple eigenvalues and stability, Ann. Mat. Pura Appl. (4) 143 (1986), 275–320.
- P. Hagedorn and S. Taliaferro, Some remarks on dynamic receptance, stiffness, and impedance of mechanical systems, Z. Angew. Math. Phy. 37 (1986), 134–149.
- 15. S. Taliaferro, Stability of bifurcating solutions in the presence of symmetry, Nonlinear Anal. 11 (1987), 821–839.
- 16. S. Taliaferro, Stability and bifurcation of traveling wave solutions of nerve axon type equations, J. Math. Anal. Appl. 137 (1989), 396–416.
- 17. S. Taliaferro, Instability of an equilibrium in a potential field, Arch. Rational Mech. Anal. 109 (1990), 183–194.
- 18. S. Taliaferro, Asymptotic behavior of positive decreasing solutions of y'' = F(t, y, y'), Geometric Analysis and Nonlinear Partial Differential Equations, I. Bakelman ed., Marcel Dekker, 1993, 105–128.
- 19. S. Taliaferro, Asymptotic behavior of solutions of nonlinear elliptic equations, Arch. Rational Mech. Anal. **122** (1993), 105–121.
- I. Bakelman and S. Taliaferro, The isoperimetric problem for two-dimensional convex surfaces, Geometric Analysis and Nonlinear Partial Differential Equations, I. Bakelman ed., Marcel Dekker, 1993, 289–303.
- S. Taliaferro, Are solutions of almost radial nonlinear elliptic equations almost radial?, Comm. Partial Differential Equations 20 (1995), 2057–2092.
- S. Taliaferro, Radial symmetry of large solutions of nonlinear elliptic equations, Proc. Amer. Math. Soc. 124 (1996), 447–455.
- 23. S. Taliaferro, An application of the isoperimetric inequality to the conformal scalar curvature equation, Math. Ann. **309** (1997), 117–133.
- 24. S. Taliaferro, Radial symmetry of positive solutions of nonlinear elliptic equations, J. Differential Equations 156 (1999), 219–253.
- 25. S. Taliaferro, On the growth of superharmonic functions near an isolated singularity I, J. Differential Equations 158 (1999), 28–47.
- 26. S. Taliaferro, On the growth of superharmonic functions near an isolated singularity II, Comm. Partial Differential Equations **26** (2001), 1003–1026.
- S. Taliaferro, Isolated singularities of nonlinear elliptic inequalities, Indiana Univ. Math. J. 50 (2001), 1885–1897.

- 28. S. Taliaferro, Local behavior and global existence of positive solutions of  $au^{\lambda} \leq -\Delta u \leq u^{\lambda}$ , Ann. Inst. H. Poincare Anal. Non Lineaire **19** (2002), 889–901.
- 29. S. Taliaferro and L. Zhang, Arbitrarily large solutions of the conformal scalar curvature problem at an isolated singularity, *Proc. Amer. Math. Soc.* **131** (2003), 2895–2902.
- S. Taliaferro, Existence of large singular solutions of conformal scalar curvature equations in S<sup>n</sup>, J. Funct. Anal. 224 (2005), 192–216.
- S. Taliaferro and L. Zhang, Asymptotic symmetries for conformal scalar curvature equations with singularity, Calc. Var. Partial Differential Equations 26 (2006), 401– 428.
- 32. S. Taliaferro, Isolated singularities of nonlinear elliptic inequalities. II. Asymptotic behavior of solutions, Indiana Univ. Math. J. 55 (2006), 1791–1812.
- S. Taliaferro, Isolated singularities of nonlinear parabolic inequalities, Math. Ann. 338 (2007), 555–586.
- S. Taliaferro, Blow-up of solutions of nonlinear parabolic inequalities, Trans. Amer. Math. Soc. 361 (2009), 3289–3302.
- 35. S. Taliaferro, Initial blow-up of solutions of semilinear parabolic inequalities, J. Differential Equations 250 (2011), 892–928.
- M. Ghergu, A. Moradifam, and S. Taliaferro, Isolated singularities of polyharmonic inequalities, J. Funct. Anal. 261 (2011), 660–680.
- 37. M. Ghergu and S. Taliaferro, Singular semilinear elliptic inequalities in the exterior of a compact set, *Proc. Roy. Soc. Edinburgh Sect. A* **143** (2013), 563–588.
- 38. S. Taliaferro, Pointwise bounds and blow-up for nonlinear polyharmonic inequalities, Ann. Inst. H. Poincare Anal. Non Lineaire **30** (2013), 1069–1096.
- 39. M. Ghergu and S. Taliaferro, Nonexistence of positive supersolutions of nonlinear biharmonic equations without the maximum principle, *Comm. Partial Differential Equations* **40** (2015), 1029–1069.
- 40. M. Ghergu and S. Taliaferro, Asymptotic behavior at isolated singularities for solutions of nonlocal semilinear elliptic systems of inequalities, *Calc. Var. Partial Differential Equations* **54** (2015), 1243–1273.
- 41. M. Ghergu and S. Taliaferro, Pointwise bounds and blow-up for Choquard-Pekar inequalities at an isolated singularity, J. Differential Equations 261 (2016), 189–217.
- M. Ghergu and S. Taliaferro, Pointwise bounds and blow-up for systems of semilinear parabolic inequalities and nonlinear heat potential estimates, J. Funct. Anal. 272 (2017), 1301–1339.
- 43. S. Taliaferro, Initial pointwise bounds and blow-up for parabolic Choquard-Pekar inequalities, *Discrete Contin. Dyn. Syst.* **37** (2017), 5211–5252.

- 44. M. Ghergu, S. Taliaferro, and I. Verbitsky, Pointwise bounds and blow-up for systems of semilinear elliptic inequalities at an isolated singularity via nonlinear potential estimates, J. Analyse Math. **139** (2019), 799-840.
- 45. S. Taliaferro, Pointwise bounds and blow-up for nonlinear fractional parabolic inequalities, J. Math. Pures Appl. **133** (2020), 287-328.
- 46. S. Taliaferro, Pointwise bounds and blow-up for systems of nonlinear fractional parabolic inequalities, *Nonlinear Anal.* **195** (2020), 26 pages.
- 47. S. Taliaferro, Existence of nonnegative solutions of nonlinear fractional parabolic inequalities, 25 pages, submitted.

#### Books

M. Ghergu and S. Taliaferro, Isolated Singularities in Partial Differential Inequalities, Cambridge University Press, 2016. xii+349pp. ISBN: 978-1-107-13838-4.