TIZIANA GIORGI

e-Mail: tiziana@nmsu.edu

EDUCATION

Ph.D. Mathematics, ***Purdue University***, West Lafayette, Indiana (1997)
B.S. Mathematics, ***with Highest Honors***, **University of Rome "Sapienza"**, Italy (1988)

POSITIONS

Program Director (August 2020 – to present)
National Science Foundation (NSF), Directorate for Mathematical and Physical Sciences (MPS), Division of Mathematical Sciences (DMS), Applied Mathematics Program, Alexandria, Virginia
Full Professor (Fall 2012 – to present)
New Mexico State University, Department of Mathematical Sciences, Las Cruces, New Mexico
Associate Professor (Fall 2006 – Summer 2012)
New Mexico State University, Department of Mathematical Sciences, Las Cruces, New Mexico
Assistant Professor (Fall 2002 – Summer 2006)
New Mexico State University, Department of Mathematical Sciences, Las Cruces, New Mexico
Assistant Professor (Fall 1999 – Spring 2002)
Towson University, Mathematics Department, Towson, Maryland
Postdoctoral Research Fellow (Fall 1997 – Summer 1999)
McMaster University, Department of Mathematics and Statistics, Hamilton, Ontario, Canada
Research Fellow (September 1988 – August 1989)
CNR (Italian National Research Council), Institute for Applied Mathematics "M. Picone", Rome, Italy

RESEARCH INTERESTS

Applied Mathematics, Calculus of Variations, Superconductivity, Materials Science

PUBLICATIONS

- with C. García-Cervera, S. Joo, ***Dimensional Reduction for the Ferroelectric Smectic-A Phase of Bent-Core Liquid Crystals***, Journal of Nonlinear Science, accepted (November 10, 2022)
- with C. García-Cervera, S. Joo, ***Boundary Vortex Formation in Polarization-modulated Orthogonal Smectic Liquid Crystals***, SIAM J. Appl. Math., Vol. 80, No. 5, pp. 2024-2044, 2020
- with C. García-Cervera, S. Joo, X. Y. Lu, ***Switching Mechanism in the $B_{1RevTilted}$ Phase of Bent-Core Liquid Crystals***, SIAM J. Math. Anal., Vol. 50, No. 5, pp. 4889-4913, 2018
- with C. García-Cervera, S. Joo, ***Sawtooth Profile in Smectic A Liquid Crystals***, SIAM J. Appl. Math., Vol. 76, No. 1, pp. 217-237, 2016
- with F. Yousef, ***Analysis of a Model for Bent-Core Liquid Crystals Columnar Phases***, Discrete and Continuous Dynamical Systems Series B, Vol. 20, No. 7, pp. 2001-2026, 2015
- with M. Falcone, S. Finzi Vita, R. Smits, ***A Semi-Lagrangian Scheme for the Game p-Laplacian via p-Averaging***, Applied Numerical Mathematics, Vol. 73, pp. 63-80, 2013
- with R. G. Smits, ***Mean Value Property for p-Harmonic Functions***, Proc. Amer. Math. Soc., Vol. 140, No.7, pp. 2453-2463, 2012
- with R. G. Smits, ***Gauge Uniqueness of Solutions to the Ginzburg-Landau System for Small Superconducting Domains***, SIAM J. Math. Anal., Vol. 42, No. 1, pp. 163-182, 2010
- with R. G. Smits, ***Principal Eigenvalue Estimates via the Supremum of Torsion,*** Indiana Univ. Math. J., Vol. 59, pp. 987-1012, 2010
- with H. Jadallah, ***On a Generalized Ginzburg-Landau Energy for Superconducting/Normal Composite Materials***, Centre de Recherches Mathématiques, CRM, Proceedings and Lecture Notes, Vol. 44, pp. 47-59, 2008
- with R. G. Smits, ***Bounds and Monotonicity for the Generalized Robin Problem***, Z. angew. Math. Phys., Vol. 58, pp. 1-19, 2007
- with H. Jadallah, ***The Onset of Superconductivity at a Superconducting/Normal Interface,*** Euro. Jnl Applied Mathematics, Vol. 17, pp. 633-650, 2006

- with R. G. Smits, ***Monotonicity Results for the Principal Eigenvalue of the Generalized Robin Problem***, Illinois J. Math., Vol. 49, No. 4, pp. 1133-1143, Winter 2005
- with R. G. Smits **Eigenvalue Estimates and Critical Temperature in Zero Fields for Enhanced Surface Superconductivity**, Z. angew. Math. Phys., Vol. 57, pp. 1-22, 2006
- ***Superconductors Surrounded by Normal Materials,*** Proc. Roy. Soc. Edinburgh Sect. A, Vol. 135A, No. 2, pp. 331-356, 2005
- with M. O'Leary, ***On the Local Integrability and Boundedness of Solutions to Quasilinear Parabolic Systems,*** Electron. J. Qual.Theory Differ. Equ., No. 14, pp. 1-14, 2004
- with R. G. Smits, ***Remarks on the Existence of Global Minimizers for the Ginzburg-Landau Energy Functional***, Nonlinear Analysis, TMA, Vol. 53, No. 2, pp 147-155, 2003
- with D. Phillips, ***The Breakdown of Superconductivity due to Strong Fields for the Ginzburg-Landau Model***, SIAM Review, Vol. 44, No. 2, pp. 237-256, 2002
- with S. Alama, L. Bronsard, ***Vortex Structures for an SO(5) Model of High-T_C Superconductivity and Antiferromagnetism,*** Proc. Roy. Soc. Edinburgh Sect. A, Vol. 130A, pp. 1183- 1215, 2000
- with S. Alama, L. Bronsard, A. J. Berlinsky, ***Vortices with Antiferromagnetic Cores in the SO(5) Model of High Temperature Superconductivity,*** Phys. Rev. B., Vol. 60, No. 9, pp. 6901-6906, 1999
- with S. Alama, L. Bronsard, ***Uniqueness of Symmetric Vortex Solutions in the Ginzburg-Landau Model of Superconductivity,*** *J. Funct. Anal.*, Vol. 167, pp. 399-424, 1999
- with D. Phillips, ***The Breakdown of Superconductivity due to Strong Fields for the Ginzburg-Landau Model***, SIAM J. Math. Anal., Vol. 30, No. 2, pp. 341-359, 1999
- with M. Falcone, ***An Approximation Scheme for Evolutive Hamilton-Jacobi Equations***, Stochastic analysis, control, optimization and applications, pp. 289-303, Systems Control Found. Appl., Birkäuser Boston, Boston, MA, 1999
- ***Derivation of Forchheimer Law via Matched Asymptotic Expansions***, Transport in Porous Media, Vol. 29, No.2, pp. 191-206, 1997
- with L. Schreyer Bennethum, ***Generalized Forchheimer Equation for Two-Phase Flow Based on Hybrid Mixture Theory***, Transport in Porous Media, Vol. 26, No.3, pp. 261-275, 1997
- with M. Falcone, P. Loreti, ***Level Sets of Viscosity Solutions: Some Applications to Fronts and Rendez-Vous Problems***, SIAM J. Appl. Math, Vol. 54, No. 5, pp. 1335-1354, 1994
- with J. Douglas, Jr., P. J. Paes-Leme, ***Generalized Forchheimer Flow in Porous Media***, *Boundary value problems for partial differential equations and applications*, pp. 99-111, RMA Res. Notes Appl. Math., 29, Masson, Paris, 1993

RESEARCH HONORS

- NMSU College of Arts & Sciences Outstanding Faculty Achievement in Scholarship/Research/Creative Activities Award, 2020
- Distinguished Career Award NMSU Research Council Award for Exceptional Achievements in Creative Scholarly Activity, 2013
- Paper "*The Breakdown of Superconductivity due to Strong Fields for the Ginzburg-Landau Model"* selected by the SIAM Review Section Editors to be featured in the SIGEST Section, 2002

Ph.D. STUDENTS

Laura Chavez-Gutierrez (NMSU, current)

Feras Yousef (NMSU, 2015) Assistant Professor, Department of Mathematics, The University of Jordan, Amman, Jordan