

Edward Fuselier, Jr.

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Education

- **Ph.D., Mathematics** Aug. 2001 - May 2006
Texas A&M University College Station, TX
Advisors: *Dr. Francis Narcowich and Dr. Joe Ward*
Thesis: *Refined Error Estimates for Vector-Valued Radial Basis Functions*
- **Bachelor of Science, Mathematics** Aug. 1996 - Dec. 2000
Southeastern Louisiana University Hammond, LA

Positions Held

- **Assistant Professor** July 2006 - *present*
United States Military Academy
- **Graduate Teaching Assistant** Aug. 2001 - May 2006
Texas A&M University
- **Mathematics Instructor** Jan. 2005 - May 2005
Texas A&M University
- **Undergraduate Research Assistant** Jan. 2000 - Dec. 2000
Southeastern Louisiana University
Advisor: *Dr. Dan McCarthy*

Research Interests

- Approximation Theory, Harmonic Analysis, Radial Basis Functions and their applications, Approximation and Interpolation on Manifolds, Divergence-free and Curl-free Functions on Manifolds.

Publications

- (with G. Wright) *Stability and Error Estimates for Vector Field Interpolation and Decomposition on the Sphere with RBFs*, submitted.
- (with F. Narcowich, J. Ward and G. Wright) *Error and Stability Estimates for Surface-Divergence Free RBF Interpolants on the Sphere*, *Mathematics of Computation*, (accepted, to appear).
- *Improved Stability Estimates and a Characterization of the Native Space for Matrix-valued RBFs*, *Advances In Computational Mathematics*, (accepted, to appear).
- (with N. Benítez, T. Broadhurst, D. Coe and H. Ford) *LensPerfect: Gravitational Lens Massmap Reconstruction Yielding Exact Reproduction of all Possible Images*, *The Astrophysical Journal*, 681 (2008), no. 2, 814–830.
- *Sobolev-type Approximation Rates for Divergence-free and Curl-free RBF Interpolants*, *Mathematics of Computation*, 77 (2008), no. 263, 1407–1423.

- *Refined Error Estimates for Matrix-Valued Radial Basis Functions*, Ph.D. Thesis, Texas A&M University, May 2006.
- (with D. R. McCarthy) *Reduction in Transport by the Parallel Velocity Shear Instability Due to Reversed Magnetic Shear*, Physics of Plasmas, August 2001, 3645-3651.

Teaching Experience

- **Honors Thesis Research Advisor** 2008-2009
Compression and Compressed Sensing
Cadet Andrew Carfang
- **Linear Algebra** Fall 2008
United States Military Academy Spring 2008
- **Introduction to Numerical Analysis** Fall 2008
United States Military Academy Fall 2007
- **Differential Calculus: Single and Multi-variable** Summer 2008
United States Military Academy Spring 2007
- **Abstract Algebra** Spring 2008
United States Military Academy
- **Integral Calculus: Single and Multi-variable** Fall 2007
United States Military Academy Summer 2007
Fall 2006
- **Calculus I, II, and III** Spring 2003 - Fall 2005
Recitation and Computer Lab Instructor
Texas A&M University
- **Business Calculus** Spring 2005
Texas A&M University
- **Graduate Algebra** Fall 2004
Grader
Texas A&M University
- **Pre-Calculus for Engineers** Fall 2002
Recitation Instructor
Texas A&M University

Professional Talks

- **Colloquium, United States Military Academy** Nov. 5, 2008
Department of Mathematical Sciences
Vector Decomposition Using Radial Basis Functions
West Point, NY
- **Colloquium, Boise State University** Mar. 20, 2008
Department of Mathematics
Customized Approximation With Radial Basis Functions
Boise, ID
- **Contributed Talk,** Mar. 4, 2007
12th International Conference in Approximation Theory
Sobolev-type Approximation Rates for Divergence-free and Curl-free RBF Interpolants
San Antonio, TX
- **Colloquium, Army Research Labs** Oct. 11, 2006
An Introduction to Radial Basis Functions with a Discussion on Applications to Vector Field Problems
Adelphi, MD

- **Colloquium, United States Military Academy** Sept. 14, 2006
Department of Mathematical Sciences West Point, NY
An Introduction to Radial Basis Functions with a Discussion on Applications to Vector Field Problems
- **Colloquium, Southeastern Louisiana University** Nov. 19, 2004
Department of Mathematics Hammond, LA
Radial Basis Functions and Applications to Scattered Data Modeling

Professional Service

- **Referee**
Advances in Computational Mathematics
The Journal of Approximation Theory
SIAM Journal on Numerical Analysis
- **Editor** Fall 2008-present
Mathematica Militaris
- **Database Administrator** Fall 2006-present
Department of Mathematical Sciences
United States Military Academy
- **Dean's Junior Faculty Council** 2007
United States Military Academy
- **Faculty Development Workshop** Summer 2007
Faculty Seminar: *Strategies for Motivating Students*
Department of Mathematical Sciences
United States Military Academy

Research and Travel Grants

- **Army Research Organization - Photonics Research Center** Fall 2008
Travel Grant
- **Army Research Organization - Photonics Research Center** Fall 2007
Travel Grant
- **Army Research Organization - Photonics Research Center** Fall 2006
Travel Grant

Selected Honors and Awards

- **Outstanding Teaching Assistant Award** May 2005
Department of Mathematics
Texas A&M University
- **NSF VIGRE Fellow** Aug. 2003 - May 2004
Texas A&M University
- **AUF Tuition Award** Aug. 2003 - May 2004
Texas A&M University
- **NSF VIGRE Matching Funds** Aug. 2001 - Aug. 2002
Texas A&M University
- **Dean's Scholar Award** Aug. 2001
College of Science
Texas A&M University

- **President's Medal** Dec. 2000
Southeastern Louisiana University
- **Oscar Undergraduate Research Grant** Spring 2000
Southeastern Louisiana University

Computer Skills

- **Programming Languages:** BASH, C, MATLAB, and HTML.
- **Operating Systems:** Unix, Linux, and all versions of Windows.
- **Mathematics Applications:** Maple, Mathematica, MATLAB, and Octave.
- **Other Applications:** L^AT_EX, the Gimp, Cold Fusion, MySQL, and standard office applications.

References

- **Dr. Francis Narcowich**
Texas A&M University
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- **Dr. Joe Ward**
Texas A&M University
jward@math.tamu.edu
- **Dr. Holger Wendland**
University of Sussex
h.wendland@sussex.ac.uk
- **Dr. Brian Winkel**
The United States Military Academy
brian.winkel@usma.edu
- **Dr. Wolfgang zu Castell**
German Research Center for Environmental Health
castell@helmholtz-muenchen.de