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BIOGRAPHICAL DATA

PERSONAL DATA

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EDUCATION

S.B. Mathematics The University of Chicago, 1986
Ph.D. Mathematics University of Maryland, 1991

PROFESSIONAL EXPERIENCE

8/2006– Professor, Mathematical Sciences, New Mexico State University
8/2000–8/2006 Associate Professor, Mathematical Sciences, New Mexico State University
2000–2005 Research Associate, Physical Science Labs–NMSU
9/2002–5/2003 Adjunct Associate Professor, The University of Texas at Austin
5-6/2000 Visiting Scholar, Macquarie University, Sydney
1995–2000 Assistant Professor, Mathematical Sciences, New Mexico State University
1994–1995 Visiting Assistant Professor, Department of Mathematics, Texas A&M University
1991–1994 R. H. Bing Instructor in Mathematics, The University of Texas at Austin
1992–1994 Research Associate, Applied Research Labs-UT
1986–1990 Teaching Assistant, University of Maryland

AWARDS AND HONORARY SOCIETIES

1990–1991 Dissertation Fellowship, Department of Mathematics, University of Maryland
1983–1986 H. Swift and C. Vux Fellowship, The University of Chicago

RESEARCH SUPPORT

2006–2007 DARPA, Analog-Digital Adaptive Microsystem (co-investigator, C. Brislawn (LANL) PI)
2006–2007 NIH, Functional Role Frontopolar Cortex EEG (co-investigator, J. Kroger PI)
2005–2007 LANL-NMSU-MOU, Signal Detection Adapted Filter Banks, PI
2004–2005 AFRL, Statistical Processing EEG (co-PI, J. Kroger PI)
2005 NSF DMS-0440945 CBMS Conference, Nonlinear Dispersive Waves, PI
2002–2005 ARO DAAD-19-02-1-0211, Coordination Models, PI
2001–2003 NSF DMS-0086986: New Mexico Analysis Seminars, co-PI
1997–1999 Sandia SURP Grant Ax-6430
1996 NMSU-ASRC Minigrant RC-96018
1993–1995 NSF Contract DMS-9307655, co-PI

PH.D. THESIS

Weighted norm inequalities for the Fourier transform (Advisor: John J. Benedetto)

PUBLICATIONS

Books

J.A. Hogan and J. Lakey, "Time–Frequency and Time–Scale Methods," Birkhäuser, Boston, 2005.

Articles since tenure

1. J.A. Hogan and J. Lakey, Periodic nonuniform sampling in shift-invariant spaces, *in* "Harmonic Analysis and Applications: In Honor of John J. Benedetto," C. Heil ed., Birkhäuser, Boston, 2006, 253–288 (invited chapter).
2. J.A. Hogan and J. Lakey, On uncertainty bounds and growth estimates for fractional Fourier transforms; *Applicable Analysis* **85** (2006), 891–899.
3. J.A. Hogan and J. Lakey, Hardy's theorem and rotations, *Proc. Amer. Math. Soc.* **134** (2006), 1459–1466.
4. J.A. Hogan and J. Lakey, Sampling and Oversampling in shift-invariant and multiresolution spaces I: validation of sampling schemes, *Int. J. Wavelets and Multires. Inf. Proc.*, **3** (2005), 257–282.
5. J.A. Hogan and J. Lakey, Non-translation invariance in principal shift-invariant spaces, *in* "Advances in Analysis: Proceedings of the 4th ISAAC Congress," H.G.W. Begehr et al., eds., World Scientific, Singapore, 2005, 471–486 (refereed conference proceedings).
6. J.E. Gilbert, J.A. Hogan and J. Lakey, BMO, boundedness of affine operators, and frames, *Appl. Comput. Harmon. Anal.*, **18** (2005), 3–24.
7. J.E. Gilbert and J. Lakey, On a characterization of the local Hardy space by Gabor frames, *in* "Wavelets, Frames, and Operator Theory," AMS Contemporary Mathematics, C. Heil, P. Jorgensen, and D. Larson eds., 2004, 153–162 (refereed conference proceedings).
8. S. Efromovich, J. Lakey, M.C. Pereyra and N. Tymes, Data-driven and optimal denoising of a signal and recovery of its derivative using multiwavelets; *IEEE Trans. Sig. Proc.* **52**, (2004), 628–635.
9. J. Lakey and M.C. Pereyra, On the nonexistence of certain divergence-free multi-wavelets, *in* "Wavelets and Signal Processing," L. Debnath ed. Birkhäuser, Boston, 2003, 41–54 (invited chapter).
10. J. Lakey and Y. Wang, On perturbations of irregular Gabor frames; *Jour. Comp. Appl. Math.* **155** (2003), 111–129.
11. J.E. Gilbert, Y.S. Han, J.A. Hogan, J. Lakey, D. Weiland and G. Weiss, Smooth molecular decompositions of functions and singular integral operators; *Memoirs of the AMS No. 742* (2002), 1–74.
12. T. L. Berkopec, J. Lakey, M. C. Pereyra and N. Tymes, Multiwavelets and EP denoising, *in* "Wavelet Applications in Signal and Image Processing IX," M. Unser, A. Aldroubi, A. Laine eds., *Proc SPIE* 4478, (2001), 230–241 (refereed conference proceedings).
13. J.A. Hogan and J. Lakey, Embeddings and uncertainty principles for generalized modulation spaces; *in* "Modern Sampling Theory: Mathematics and Applications," J. Benedetto and P. Ferreira, eds. 75–108, Birkhauser, 2001 (invited chapter).
14. J.A. Hogan and J. Lakey, Zak transforms, sampling and aliasing in multiresolution spaces; *in* *Proc. Conf. on Applied Math.*, Edmond, OK, February 2001, University of Central Oklahoma, 79–93.
15. J.A. Hogan and J. Lakey, Sampling and aliasing without translation invariance; *in* *Proc. Fourth Int. Conf. on Sampling Theory and Applications (SampTA'01)*, Orlando FL, USA, May 2001, 61–66 (refereed conference proceedings).
16. J.A. Hogan and J. Lakey, Sampling for shift invariant and wavelet subspaces *in* "Wavelet Applications in Signal and Image Processing VIII," M. Unser, A. Aldroubi, A. Laine eds., *Proc SPIE* 4119, (2000), 36–47 (refereed conference proceedings).
17. J. Lakey, S. Obeidat and M.C. Pereyra, Multiwavelet characterization of function spaces adapted to the Navier-Stokes equations, *in* "Wavelet Applications in Signal and Image Processing VIII," M. Unser, A. Aldroubi, A. Laine eds., *Proc SPIE* 4119, (2000) 372–383 (invited paper).
18. J.E. Gilbert, J.A. Hogan and J. Lakey, Characterization of Hardy spaces by singular integrals and

‘divergence-free’ wavelets; *Pacific J. Math.* **193** (2000), 79–105.

19. J. Alvarez, M. Guzman-Partida and J. Lakey, Spaces of λ -bounded central mean oscillation, Morrey spaces, and λ -central Carleson measures; *Collect. Math.* **51** (2000) 1–47.
20. J. Lakey and M.C. Pereyra, Divergence-free multiwavelets on rectangular domains; *in* “Wavelet Analysis and Multiresolution Methods,” 203–240, Marcel Dekker, 2000 (invited chapter).

Articles before tenure

21. J. Lakey and M.C. Pereyra, Multiwavelets on the interval and divergence-free wavelets; *in* “Wavelet Applications in Signal and Image Processing VII,” M. Unser, A. Aldroubi, A. Laine eds., *Proc SPIE* 3813, (1999) 162–173 (refereed conference proceedings).
22. J. Lakey, Constructive decomposition of functions of finite central mean oscillation; *Proc. Amer. Math. Soc.* **127** (1999), 2375–2384.
23. J.A. Hogan and J. Lakey, Sharp embeddings for modulation spaces and the Poisson summation formula; *in* *Proc. Sampling Theory and Its Applications*, Loen Norway, 1999, 52–57 (refereed conference proceedings).
24. J.E. Gilbert, J.A. Hogan and J. Lakey, Fourier and wavelet characterizations of massless Hardy spaces; *in* “Dirac Operators in Analysis,” J. Ryan and D. Struppa eds., 25–40, Longman, 1998 (refereed conference proceedings).
25. J. Lakey, P. Massopust and C. Pereyra, Divergence-free multiwavelets; *in* “Approximation Theory IX,” Vol. 2, C.K. Chui and L.L. Schumaker eds., Vanderbilt Univ. Press, Nashville, 1998, 161–168 (refereed conference proceedings).
26. J.E. Gilbert, J.A. Hogan and J. Lakey, Atomic decomposition of divergence-free Hardy spaces; *Math. Moravica, Special Vol, Proc. 5th IWAA* (1997) 33–52.
27. J. Lakey, Metaplectic frames and sampling theory; *in* “1997 International Workshop on Sampling Theory and its Applications,” P.J. Ferreira ed., Universidade de Aveiro, 1997 (refereed conference proceedings).
28. J.E. Gilbert, J.A. Hogan and J. Lakey, Wavelet subspaces for sampling and extrapolation; *in* “1997 International Workshop on Sampling Theory and its Applications,” P.J. Ferreira ed., Universidade de Aveiro, 1997 (refereed conference proceedings).
29. J. Lakey and W. Trappe, Analysis of chirp signals by time-frequency localization frames; *in* “Wavelet Applications in Signal and Image Processing IV,” M. Unser, A. Aldroubi, A. Laine eds., *Proc SPIE* 2825, (1996) 551–560 (refereed conference proceedings).
30. J.E. Gilbert, J.A. Hogan and J. Lakey, Frame decompositions of form-valued Hardy spaces; *in* “Clifford Algebras in Analysis and Related Topics,” 239–256, CRC Press, 1996 (refereed conference proceedings).
31. J. Lakey and W. Trappe, Signal analysis by composite wavelet transforms; *Approximation Theory VIII*, vol. 2, C.K. Chui and L.L. Schumaker, eds., 243–250, World Scientific, 1995 (refereed conference proceedings).
32. J.A. Hogan and J. Lakey, Extensions of the Heisenberg group by dilations and frames; *Appl. Comp. Harmonic Anal.*, **2** (1995), 174–199.
33. J. Lakey, Trace inequalities, maximal inequalities, and weighted Fourier transform estimates; *J. Fourier Anal. Appl.*, **1** (1994), 201–232
34. J.E. Gilbert and J. Lakey, Wavelets of composite type; *Proc. IEEE-ICASSP’ 94*, Adelaide pp. IV-117–120 (refereed conference proceedings).
35. J. Lakey, Weighted Fourier transform inequalities via mixed norm Hausdorff–Young inequalities; *Canad. J. Math.*, **46** (1994), 586–601
36. J.J. Benedetto and J. Lakey, The definition of the Fourier transform for weighted norm inequalities; *J. Funct. Anal.*, **120** (1994), 403–439.
37. J. Lakey, Weighted restriction for curves; *Canad. Math. Bull.*, **36** (1993), 87–95