

CURRICULUM VITAE: FRANCIS JOSEPH NARCOWICH*

CURRENT CONTACT INFORMATION

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CITIZENSHIP: U.S.A.

IN THE PROFESSION

1/1997-9/2021	Director, Center for Approximation Theory
9/1987-present	Professor, Texas A&M University
6/1986-9/1987	Associate Professor, Texas A&M University
5/1986-6/1986	Visiting Associate Professor, Ohio State University
9/1985-4/1986	Visiting Member of the Courant Institute
9/1978-1985	Associate Professor, Texas A&M University
7/1972-1978	Assistant Professor, Texas A&M University
9/1971-6/1972	Princeton Fellow, Princeton University, Princeton, New Jersey
Summer 1969,70,71	Applied Mathematician, Zenith Radio Corporation
1968-1971	NSF Fellow, Princeton University, Princeton, New Jersey

DEGREES

DEGREE	MAJOR	UNIVERSITY	YEAR	THESIS ADVISOR & TOPIC
Ph.D.	Mathematical Physics	Princeton	1972	E. P. Wigner (Nobel Prize, Physics, 1963) Mathematical Theory of the R-Matrix
M.A.	Mathematical Physics	Princeton	1970	
B.S.	Math & Physics	DePaul	1968	

PH.D. STUDENTS

- Svenja Lowitzsch (May 2002), Dissertation: *Approximation and Interpolation Employing Divergence-Free Radial Basis Functions with Applications* (Co-advisor - J. D. Ward)
- Quoc Thong Le Gia (August 2003), Dissertation: *Approximation of Linear Partial Differential Equations on Spheres* (Co-advisor - J. D. Ward)
- Edward Fuselier (May 2006), Dissertation: *Refined Error Estimates for Matrix-Valued Radial Basis Functions* (Co-advisor - J. D. Ward)
- John Paul Ward (August 2010), Dissertation: *L^p Bernstein Inequalities and Radial Basis Function Approximation* (Co-advisor - J. D. Ward)
- Stephen Rowe (May 2015), Dissertation: *Meshfree Methods using Localized Kernel Bases* (Co-advisor, J. D. Ward)

POSTDOCTORAL FELLOWS

*Updated: 3/10/2022

- Thomas Hangelbroek, NSF post-doc, Sept. 2007- Aug. 2010 (co-supervisor J. D. Ward).

EDITORIAL BOARDS

- SIAM Journal on Numerical Analysis (May 2005 - 2019)
- Mathematics of Computation (February 2008 - 2012)

SOCIETY MEMBERSHIPS

- Society for Industrial and Applied Mathematics
- American Mathematical Society

AWARDS

- The Department of Mathematics Outstanding Teaching Award, 2004.
- Distinguished Teaching Award (College of Science, TAMU), 1983.
- Academic Study Leave, 1985-86.

PUBLICATIONS

PAPERS PUBLISHED OR ACCEPTED

1. F.J. Narcowich, “Mathematical Theory of the R-Matrix, I. The Eigenvalue Problem”, *Journal of Mathematical Physics*, **15** (1974), 1626–1634.
2. F.J. Narcowich, “Mathematical Theory of the R-Matrix, II. The R-Matrix and its Properties”, *Journal of Mathematical Physics*, **15** (1974), 1635–1642.
3. G.D. Allen, C.K. Chui, W.R. Madych, F.J. Narcowich and P.W. Smith, “Pade Approximation and Orthogonal Polynomials”, *Bull. of the Australian Math. Soc.*, **10** (1974), 263–270.
4. G.D. Allen, C.K. Chui, W.R. Madych, F.J. Narcowich and P.D. Smith, “Pade Approximation and Gaussian Quadrature”, *Bull. of the Australian Math. Soc.*, **11** (1974), 63–69.
5. G.D. Allen, C.K. Chui, W.R. Madych, F.J. Narcowich and P.W. Smith, “Pade Approximation of Stieltjes Series”, *Journal of Approx. Theory*, **14** (1974), 302–316.
6. G.D. Allen and F.J. Narcowich, “On the Representation and Approximation of the Class of Operator-Valued Analytic Functions”, *Bull. of the American Math. Soc.*, **81** (1975), 440–442.
7. G.D. Allen, F.J. Narcowich, and J. Williams, “An Operator Version of a Theorem of Kolmogorov”, *Pac. J. of Math.*, **61** (1975), 305–311.
8. G.D. Allen and F.J. Narcowich, “Convergence of the Diagonal Operator-Valued Pade Approximants to the Dyson Expansion”, *Comm. in Math. Phys.* **45** (1975), 153–157.
9. G.D. Allen and F.J. Narcowich, “R-Operators, I. Representation Theory and Applications”, *Indiana Univ. Math. Journal*, **25** (1976), 945–963.
10. F.J. Narcowich, “An Imbedding Theorem for Indeterminate Hermitian Moment Sequences”, *Pac. J. of Math.*, **66** (1976), 499–507.
11. S. Barone, F.J. Narcowich, M.A. Narcowich, “Flouquet Theory and Applications”, *Phys. Review A*, **15** (1977), 1109–1125.
12. F.J. Narcowich, “R-Operators, II. On the Approximation of Certain Operator-Valued Analytic Functions and the Hermitian Moment Problem”, *Indiana U. Math. J.*, **26** (1977), 483–513.
13. F.J. Narcowich, “On the Extreme Points of the Interval Between Two Operator”, *Proc. of AMS*, **67** (1977), 84–87.
14. F.J. Narcowich, “Analytic Properties of the Boundary of the Numerical Range”, *Indiana U. Math. J.*, **29** (1980), 67–77.
15. F.J. Narcowich and J.D. Ward, “A Toplitz-Hausdorff Theorem for Matrix Ranges”, *Journal of Operator Theory*, **6** (1981), 87–101.
16. S.A. Fulling, F.J. Narcowich, and R.M. Wald, “Singularity Structure of the Two-Point Function in Quantum Field Theory in Curved Spacetime, II”, *Annals of Physics*, **136** (1981), 243–272.

17. S.A. Fulling and F.J. Narcowich, “A basis for local solutions of an elliptic operator”, *Journal of Math. Analysis and Applications*, **86** (1982), 246–267.
18. F.J. Narcowich and J.D. Ward, “Support Functions for Matrix Ranges: Analogues of Lumer’s Formula”, *Journal of Operator Theory*, **7** (1982), 25–49.
19. F.J. Narcowich and J.D. Ward, “A Characterization of Essential Matrix Ranges”, *Bulletin of the London Math.* **14** (1982), 107–111.
20. F.J. Narcowich and J.D. Ward, “Toeplitz-Hausdorff Systems”, *Linear Algebra and its Applications*, **62** (1984), 183–193.
21. F.J. Narcowich, J.D. Ward, and D. Legg, “Best Approximation from Stepped Subspaces”, *Journal of Approximation Theory and its Applications*, **1** (1985), 29–49.
22. F.J. Narcowich, “On the Quantum Liouville Equation”, *Physica*. **134A** (1985), 193–208.
23. F.J. Narcowich and R.F. O’Connell, “Necessary and sufficient conditions for a phase-space function to be a Wigner distribution”, *Physical Review A*, **34** (1986), 1–6.
24. F.J. Narcowich, “A Dyson-like expansion for solutions to the quantum Liouville equation”, *Journal of Mathematical Physics*, **27** (1986), 2502–2510.
25. F.J. Narcowich, “A Quantum Mechanical Moment Problem”, *Proceedings of the First International Conference on the Physics of Phase Space*, held at College Park, Md, 20-23 May 1986, Springer Lecture Notes in Physics 278, ed. by Y.S. Kim and W.W. Zachary, Springer-Verlag, Berlin, 1987.
26. F.J. Narcowich, “The Problem of Moments in the Phase Space Formulation of Quantum Mechanics”, *J. Math. Phys.*, **28** (1987), 2873–2882.
27. F.J. Narcowich, “Conditions for the Convolution of two Wigner distributions to be itself a Wigner distribution”, *J. Math. Phys.* **29** (1988), 2036–2041.
28. F.J. Narcowich and R.F. O’Connell, “A unified approach to quantum dynamical maps and Gaussian Wigner functions”, *Phys. Lett. A*, **133** (1988), 167–170.
29. F.J. Narcowich, “Distributions of \hbar -Positive Type and Applications,” *J. Math. Phys.*, **30** (1989), 2565–2573.
30. F.J. Narcowich, “Geometry and Uncertainty,” *J. Math. Phys.*, **31** (1990), 354–364.
31. G. Chen, S.A. Fulling, F.J. Narcowich, C. Qi, “An asymptotic average decay rate for the wave equation with variable coefficient viscous damping”, *SIAM J. on Applied Mathematics*, **50** (1990), 1341–1347.
32. G. Chen, S.A. Fulling, F.J. Narcowich, S. Shun, “Exponential decay of energy of evolution equations with locally distributed damping”, *SIAM J. on Applied Mathematics*, **51** (1991), 266–301.
33. F.J. Narcowich and J.D. Ward, “Norms of inverses and condition numbers for matrices associated with scattered data,” *Journal of Approx. Theory*, **64** (1991), 69–94.
34. F.J. Narcowich and J.D. Ward, “Norms of Inverses for Matrices Associated with Scattered Data,” pp. 341-348 in *Curves and Surfaces*, ed. by P.-J. Laurent, A. Le Méhauté, and L.L. Schumaker, Academic Press, Inc., San Diego, CA, 1991.
35. F.J. Narcowich and J.D. Ward, “Norm Estimates for the Inverses of a General Class of Scattered-Data Radial-Function Interpolation Matrices,” *Journal of Approx. Theory*, **69** (1992), 84–109.
36. A.J. Kurdila, J.L. Junkins, L. Kealey, F.J. Narcowich, and M. Bakich, “Approximation of Poincaré Sections Arising in Attitude Control,” pp. 1721-1735 in *Astrodynamics 1991, Part III*, ed. by B. Kaufman *et al.*, Univelt, San Diego, CA, 1992.
37. F.J. Narcowich, N. Sivakumar, and J.D. Ward, “Estimates on Condition Numbers for Interpolation Matrices Associated with certain Order 0 Radial Functions,” in *Advances in Computer Methods for Partial Differential Equations VII*, the Proceedings of the *Seventh IMACS International Conference on Computer methods for Partial Differential Equations*, held at Rutgers University on 22-24 June, 1992, ed. by R. Vichnevetsky, D. Knight, and G. Richter, IMACS, New Jersey, 1992.
38. A.J. Kurdila and F.J. Narcowich, “Sufficient conditions for penalty formulation methods in analytical dynamics,” *Computational Mechanics*, **12** (1993), 81–96.
39. F.J. Narcowich, N. Sivakumar, and J.D. Ward, “On Condition Numbers Associated With Radial-Function Interpolation.” *Journal of Math. Analysis and Applications*, **186** (1994), 457–485.
40. F.J. Narcowich and J.D. Ward, “Generalized Hermite Interpolation via Matrix-Valued Conditionally Positive Definite Functions,” *Mathematics of Computation*, **63** (1994), 661–688.
41. F.J. Narcowich, “Grid-free methods of Hermite interpolation with RBF-like functions on a manifolds,” pp. 367-369 in *Proceedings of the 14th IMACS World Congress on Computational and Applied Mathe-*

- matics, I*, held at Georgia Tech on 11-15 July, 1994, ed. by W.F. Ames, IMACS, New Jersey, 1994.
42. A.J. Kurdila, F.J. Narcowich, and J.D. Ward, "Persistence of Excitation in Identification Using Radial Basis Approximants," *SIAM J. Control and Optimization*, **33** (1995), 625–642.
 43. F.J. Narcowich, "Generalized Hermite Interpolation and Positive Definite Kernels on a Riemannian Manifold," *Journal of Math. Analysis and Applications*, **190** (1995), 165–193.
 44. A.J. Kurdila, F.J. Narcowich, and J.D. Ward, "Persistence of Excitation, Identification, and Radial Basis Functions," in the Proceedings of the 33rd *IEEE Conference on Decision and Control* held at Lake Buena Vista, Florida on December 14-16, 1994. (Summary of # 41.).
 45. F.J. Narcowich, P.W. Smith, and J.D. Ward, "Density of Translates of Radial Functions on Compact Sets," in *Approximation Theory VIII, vol. 2: Wavelets and Multilevel Approximation*, pp. 301-308, Charles K. Chui and Larry L. Schumaker, eds., World Scientific, Singapore, 1995.
 46. F.J. Narcowich and J.D. Ward, "Nonstationary Spherical Wavelets for Scattered Data," in *Approximation Theory VIII, vol. 2: Wavelets and Multilevel Approximation*, pp. 301-308, Charles K. Chui and Larry L. Schumaker, eds., World Scientific, Singapore, 1995.
 47. F.J. Narcowich and J. D. Ward, "Wavelets Associated with Periodic Basis Functions," *Applied and Computational Harmonic Analysis*, **3** (1996), 40–56.
 48. F.J. Narcowich and J.D. Ward, "Nonstationary Wavelets on the m -Sphere for Scattered Data," *Applied and Computational Harmonic Analysis*, **3** (1996), 324–336.
 49. N. Dyn, F.J. Narcowich and J.D. Ward, A framework for interpolation and approximation on Riemannian manifolds, *Approximation Theory and Optimization*, M. D. Buhmann and A. Iserles (eds.), Cambridge University Press, 1997, pp. 133–144.
 50. F.J. Narcowich, N. Sivakumar, and J.D. Ward, Stability results for scattered-data interpolation on Euclidean spheres, *Advances in Comp. Math.*, **8** (1998), 137–163.
 51. F.J. Narcowich, "Recent Developments in Approximation via Positive Definite Functions," in *Approximation IX, vol. II: Computational Aspects*, C.K. Chui and L. Schumaker (eds.), Vanderbilt University Press, Nashville, 1998, pp. 221-242.
 52. N. Dyn, F.J. Narcowich and J.D. Ward, "Variational Principles and Sobolev-Type Estimates for Generalized Interpolation on a Riemannian Manifold," *Constructive Approximation*, **15** (1999), 175–208.
 53. F.J. Narcowich, R. Schaback, J.D. Ward, "Multilevel Interpolation and Approximation," *Applied and Computational Harmonic Analysis*, **7** (1999), 243–261.
 54. H.N. Mhaskar, F.J. Narcowich, and J.D. Ward, Approximation Properties of Zonal Function Networks Using Scattered Data on the Sphere, *Adv. Comput. Math.*, **11** (1999), 121–137.
 55. T.H. O'Donnell, F.J. Narcowich, H.L. Southall, and J.D. Ward, "Multiple source direction finding with reduced training and increased generalization," in Proceedings of the Millenium Conference on Antennas & Propagation, held from 9-14 April 2000, Davos, Switzerland, #SP-444 ESA Publications Division, ESTEC, 2200 AG Noordwijk.
 56. H.N. Mhaskar, F.J. Narcowich, and J.D. Ward, Quasi-interpolation in shift invariant spaces, *J. Math. Anal. Appl.*, **251** (2000), 356–363.
 57. H.N. Mhaskar, F.J. Narcowich, J. Prestin, and J.D. Ward, Polynomial frames on the sphere, *Adv. Compt. Math.*, **13** (2000), 387–403.
 58. H.N. Mhaskar, F.J. Narcowich, and J.D. Ward, Spherical Marcinkiewicz-Zygmund Inequalities and Positive Quadrature, *Math. Comp.*, **70** (2001), 1113–1130.
 59. H.N. Mhaskar, F.J. Narcowich, and J.D. Ward, "Representing and Analyzing Scattered Data on Spheres," *Multivariate Approximation and Applications*, edited by N. Dyn, D. Leviaton, D. Levin, and A. Pinkus, Cambridge University Press, Cambridge, U. K., 2001.
 60. H.N. Mhaskar, F.J. Narcowich, N. Sivakumar, and J.D. Ward, Approximation with Interpolatory Constraints, *Proc. AMS*, **130** (2002), 1355–1364.
 61. F.J. Narcowich, R. Schaback and J.D. Ward, Approximation in Sobolev Spaces by Kernel Expansions, *J. Approx. Theory*, **114** (2002), 70–83.
 62. F.J. Narcowich, N. Sivakumar and J.D. Ward, On Convergent Interpolatory Processes Associated with Periodic Basis Functions, *Acta Math. (Szeged)*, **68** (2002), 133–161.
 63. F.J. Narcowich and J.D. Ward, Scattered-Data Interpolation on Spheres: Error Estimates and Locally Supported Basis Functions, *SIAM J. Math. Anal.*, **33** (2002), 1393–1410.
 64. R. Lorentz, F.J. Narcowich and J.D. Ward, Collocation Discretizations of the Transport Equation with

- Radial Basis Functions, *Appl. Math. Comput.*, **145** (2003), 97-116.
65. F.J. Narcowich, H. Wendland and J.D. Ward, Refined Error Estimates for Radial Basis Function Interpolation, *Constructive Approximation*, **19** (2003), 541-564.
 66. H.N. Mhaskar, F.J. Narcowich, and J.D. Ward, On the representation of band-dominant functions using finitely many bits, *Advances in Computational Mathematics*, **21** (2004), 127-146.
 67. H.N. Mhaskar, F.J. Narcowich, and J.D. Ward, Zonal function network frames on the sphere, *Neural Networks*, **16** (2003) 183-203.
 68. F. J. Narcowich, J. D. Ward, Preface [Computation and approximation on the sphere], *Adv. Comput. Math.* **21** (2004), no. 1-2, 1-2.
 69. F. J. Narcowich and J. D. Ward, Scattered-Data interpolation on R^n : Error Estimates for Radial Basis and Band-limited Functions, *SIAM J. Math. Anal.*, **36** (2004), 284-300.
 70. F. J. Narcowich, J. D. Ward, and H. Wendland, Sololev Bounds on Functions with Scattered Zeros, with Applications to Radial Basis Function Surface Fitting, *Math. Comp.*, **74** (2005), 743-763.
 71. F. J. Narcowich, Recent Developments in Error Estimates for Scattered-Data Interpolation via Radial Basis Functions, *Numer. Algorithms*, **39** (2005), 307-315.
 72. F. J. Narcowich, J. D. Ward, and H. Wendland, Sololev Error Estimates and a Bernstein Inequality for Scattered Data Interpolation via Radial Basis Functions, *Constr. Approx.*, **24** (2006) 175-186.
 73. Q. T. Le Gia, F. J. Narcowich, J. D. Ward, and H. Wendland, Continuous and Discrete Least-Squares Approximation by Radial Basis Functions on Spheres, *J. Approx. Theory*, **143** (2006), 124-133.
 74. F. J. Narcowich, P. Petrushev, and J. D. Ward, Localized Tight Frames on Spheres, *SIAM J. Math. Anal.*, **38** (2006), 574-594.
 75. F. J. Narcowich, P. Petrushev, and J. D. Ward, Decomposition of Besov and Triebel-Lizorkin spaces on the sphere, *J. Funct. Anal.*, **238** (2006), 530-564.
 76. F. J. Narcowich, X. Sun, J. D. Ward, and H. Wendland, Direct and Inverse Sobolev Error Estimates for Scattered Data Interpolation via Spherical Basis Functions, *Found. Comput. Math.*, **7** (2007), 369-390.
 77. F. J. Narcowich, J. D. Ward, and G. B. Wright, Divergence-free RBFs on Surfaces, *J. Fourier Anal. Appl.*, **13** (2007), 643-663.
 78. F. J. Narcowich, X. Sun, and J. D. Ward, Approximation Power of RBFs and Their Associated SBFs: A Connection, *Adv. Comput. Math.*, **27** (2007), 107-124.
 79. E. J. Fuselier, F. J. Narcowich, J. D. Ward, G. Wright, Error and Stability Estimates for Surface-Divergence Free RBF Interpolants on the Sphere, *Math. Comp.*, **78** (2009), 2157-2186.
 80. H. N. Mhaskar, F. J. Narcowich, J. Prestin, and J. D. Ward, L^p Bernstein Estimates and Approximation by Spherical Basis functions, *Math. Comp.*, **79** (2010), 1647-1679.
 81. F. J. Narcowich, X. Sun, J. D. Ward and Z. Wu, LeVeque type inequalities and discrepancy estimates for minimal energy configurations on spheres, *J. Approx. Theory*, **162** (2010), 1256-1278.
 82. T. Hangelbroek, F. J. Narcowich and J. D. Ward, Kernel Approximation on Manifolds I. Bounding the Lebesgue Constant, *SIAM J. Math. Anal.*, **42** (2010) 1732-1760.
 83. T. Hangelbroek, F. J. Narcowich, X. Sun and J. D. Ward, Kernel Approximation on Manifolds: The L^∞ -norm of the L^2 -projector, *SIAM J. Math. Anal.*, **43** (2011), no. 2, 662-684.
 84. T. Hangelbroek, W. R. Madych, F. J. Narcowich, and J. D. Ward, Cardinal interpolation with Gaussian kernels, *J. Fourier Anal. Appl.*, **18** (2012), no. 1, 67-86.
 85. T. Hangelbroek, F. J. Narcowich and J. D. Ward, Polyharmonic and Related Kernels on Manifolds: Interpolation and Approximation, *Found. Comput. Math.*, **12** (2012), no. 5, 625-670.
 86. E. Fuselier, T. Hangelbroek, F. J. Narcowich, J. D. Ward, and G. B. Wright, Localized Bases for Kernel Spaces on the Unit Sphere. *SIAM J. Numer. Anal.* **51** (2013), no. 5, 2538-2562.
 87. E. Fuselier, T. Hangelbroek, F. J. Narcowich, J. D. Ward, and G. B. Wright, Kernel Based Quadrature on Spheres and other Homogeneous Spaces. *Numer. Math.*, **127** (2014), no. 1, 57-92.
 88. F. J. Narcowich, S. T. Rowe and J. D. Ward, A Novel Galerkin Method for Solving PDEs on the Sphere Using Highly Localized Bases. *Math. Comp.* **86** (2017) 197-231.
 89. T. Hangelbroek, F. J. Narcowich, C. Rieger and J. D. Ward, An inverse theorem for compact Lipschitz domains in \mathbb{R}^d using Localized kernel bases. *Math Comp.* **87** (2018), 1949-1989.
 90. R. B. Lehoucq, F. J. Narcowich, S. T. Rowe and J. D. Ward, A Meshless Galerkin Method for Non-Local Diffusion Using Localized Kernel Bases, *Math. Comp.* **87** (2018), 2233 -2258.

91. T. Hangelbroek, F. J. Narcowich, C. Rieger and J. D. Ward, Direct and Inverse Results on Bounded Domains for Meshless Methods via Localized Bases on Manifolds, in *Contemporary Computational Mathematics - a celebration of the 80th birthday of Ian Sloan*, pp. 489-513, J. Dick, F. Y. Kuo, H. Woźniakowski, eds., Springer-Verlag, 2018.
92. J. Kunemund, F. J. Narcowich, J. D. Ward and H. Wendland , A High-Order Meshless Galerkin Method for Semilinear Parabolic Equations on Spheres. *Numer. Mathematik*, 142 (2019), 383-419.
93. John Paul Ward, Francis J. Narcowich and Joseph D. Ward, Interpolating splines on graphs for data science and applications, *Appl. Comput. Harmon. Anal.*, 49 (2020), 540-557.
94. Amir, A., Levin, D., Narcowich, F.J. et al. Meshfree Extrapolation with Application to Enhanced Near-Boundary Approximation with Local Lagrange Kernels. *Found. Comput. Math* 22 (2022), 1-34. <https://doi.org/10.1007/s10208-021-09507-x> <https://doi.org/10.1007/s10208-021-09507-x>

BOOKS

1. S.A. Fulling and F.J. Narcowich (eds.), *Forty More Years of Ramifications: Spectral Asymptotics and Its Applications*, Discourses in Mathematics and Its Applications, Departement of Mathematics, Texas A & M University, College Station, TX, 1991.
2. Albert Boggess and Francis J. Narcowich, *A First Course in Wavelets with Fourier Analysis*, Prentice-Hall, Upper Saddle River, NJ, 2001.
3. Albert Boggess and Francis J. Narcowich, *A First Course in Wavelets with Fourier Analysis*, second edition, John Wiley & Sons, Hoboken, NJ, 2009.

OTHER WRITINGS[†]

1. (with Mary L. Boas) "Classical Orbits Passing Through a Force Center." *American Journal of Physics*, **36**, No. 12 (1968), p. 1189.
2. (with E.P. Wigner) "Extension of the R-Matrix Theory." *Bulletin of the American Physical Society*, April, 1971, **16**, No. 4, p. 623.
3. "On Kahan's Routine for Reduction of Error in Adding Arrays," August 26, 1969.
4. "On Converting a Network into an Analog Block Diagram," June, 1970.
5. "On Converting a Network with Excess Elements into an Analog Block Diagram," July, 1970.
6. "An Implicit Integration Method," August 31, 1970.
7. "Representation of an Analog Block Diagram by a Directed Graph," September 15, 1970.
8. "An Algorithm for Finding the Condensation of a Directed Graph," September 9, 1970.
9. "A Topological Interpretation of Berry's Ordering Algorithm," June 22, 1971.
10. "On the Modification of Gear's Implicit Integration Method," August 19, 1971.
11. "A Geometrical Interpretation of the Solution of Non-Linear Algebraic Equations Via Differential Equations," September 15, 1971.
12. Thesis, Princeton University, 1972. "Mathematical Theory of The R-Matrix."
13. "Continuation Methods," August 1980. (Report prepared for Sage Data Corporation).
14. "Employing Jacobian-updates in a Continuation Method," June 1981. (Report prepared for Sage Data Corporation).
15. F.J. Narcowich and S.A. Fulling, "Wigner Distribution Functions", Seminars in Mathematical Physics No. 1, College Station, TX, 1986.

CONFERENCE TALKS, SEMINARS & COLLOQUIA

1. "Classical Orbits Passing through a Force Center," given at January, 1968 meeting of the American Physical Society. Abstract in *American Journal of Physics*, **36**, No. 12 (1968), p. 1189.
2. "Extension of the R-Matrix Theory", given at the April 1971 meeting of the American Physical Society. Abstract in *Bulletin of the American Physical Society*, April 1971. **16**, No. 4, p. 623. (E. P. Wigner, co-author.)

[†]Items 3–11 were reports prepared for Zenith Radio Corporation.

3. "Some results in R-Matrix Theory", given at the January, 1974 meeting of the American Mathematical Society. Abstract in *Notice of the A.M.S.*, **21**, No. 1 (1974), P.A. 251.
4. "An Operator Maximum Principle and an Application of a Theorem of Douglas," given at the CBMS-NSF Regional Conference on Operator Theory at Bucknell University, August, 1975.
5. "On Indeterminate Hermitian Moment Sequences," given at the January, 1976, meeting of the American Mathematical Society. Abstract in *Notices of the A.M.S.*, **23**, No. 1, 1976, pp. A-163.
6. "R-Operators and Quantum Scattering Theory," a Physics Colloquium given at L.S.U. on February 20, 1976.
7. "Pade Approximation of a Class of Operator-Valued Analytic Functions," given at the special session on Approximation Theory to the Texas Section of the Mathematical Association of America, April 2, 1976. (20 minute talk).
8. "A Basis for the Local Solutions of an Elliptic Equation," given at a Physics Seminar at the University of Chicago on March 10, 1980.
9. "Some Remarks on Wigner Distribution Functions," a Physics Colloquium given at L.S.U. on March 14, 1985.
10. "Expansions associated with the quantum Liouville equation," given to the Analysis Seminar at the Courant Institute on Oct. 27, 1985.
11. "A quantum mechanical moment problem," given at the *First International Conference on the Physics of Phase Space*, May 22, 1986. (See publication no. 25, this *Vita*.)
12. "A quantum mechanical moment problem and generalized uncertainty relations," given at the January, 1987 meeting of the A.M.S. Abstract in *Abstracts of the AMS*, **8**, No. 1 (1987), p. 128.
13. "The Problem of Moments for Wigner Distributions," a half-hour invited talk given at the *Eight Annual Western States Mathematical Physics Meeting* on Feb. 14, 1989.
14. "The Moment Problem for a Wigner Distribution, Geometry, and Uncertainty," given at the Telluride Summer Research Center's *Workshop on Dynamics of Classical and Quantum Systems*, July 6, 1989.
15. "Geometry and Uncertainty," a half-hour invited talk given at the *861st Meeting of the AMS* at Denton, TX, on Nov. 3, 1990.
16. "Chaos in Adaptive Control of Spacecraft Dynamics," (with A.J. Kurdila), given at *Dynamics Days Texas Conference*, University of Houston, Houston, TX, January 6, 1991
17. "Approximation of Poincaré Sections Arising in Attitude Control," a half-hour invited talk, joint with A.J. Kurdila, given at the special session on Chaos, Predictability, and Stability in Astrodynamics at AAS/AIAA Specialist Conference held at Durango, CO, on August 19-22, 1991. (See # 38 above.)
18. "An application of radial basis functions to control theory," a half-hour invited talk given at the Annual Symposium of the Center for Approximation Theory, Texas A&M University, College Station, TX, on April 10, 1992.
19. "Estimates on Condition Numbers for Interpolation Matrices Associated with Certain Order 0 Radial Functions," a half-hour invited talk, joint with N. Sivakumar and J.D. Ward, given at the special session on Advances in Grid Free, Radial Basis Function Approximation at the Seventh IMACS International Conference on Computer Methods for Partial Differential Equations held at Rutgers University 22-24 June, 1992.
20. "Generalized Hermite Interpolation Using Radial Basis functions," a half-hour invited talk given at the Annual Symposium of the Center for Approximation Theory, Texas A&M University, College Station, TX, on March 12, 1993.
21. "A radial basis function approach to solving PDEs numerically," a half-hour invited talk given at the *866th Meeting of the AMS* at College Station, TX, on October 22, 1993.
22. "Generalized Hermite interpolation on T^m with periodic 'RBFs'," a half-hour invited talk given at the Annual Symposium of the Center for Approximation Theory, Texas A&M University, College Station, TX, on April 15, 1994.
23. "Grid-free methods of Hermite interpolation with RBF-like functions on a manifolds," a half-hour invited talk, given at the special session on Theory and Applications of Radial Basis Functions at the Fourteenth IMACS World Congress held at Georgia Tech on 11-15 July, 1994.
24. "Periodic-Basis-Function Wavelets, Uncertainty, and Localization," a half-hour invited talk, joint with J. D. Ward, given at the special session on Wavelet Galerkin Methods in Computational Mechanics at Society of Engineering Science 31st Annual Technical Meeting held at Texas A&M University on

- October 10-12, 1994.
25. "Persistence of Excitation, Identification, and Radial Basis Functions," a 20 minute (regular paper) submitted talk, joint with A.J. Kurdila and J.D. Ward, given at the 33rd IEEE Conference on Decision and Control held at Lake Buena Vista, Florida on December 14-16, 1994.
 26. "Nonstationary Spherical Wavelets for Scattered Data," a half-hour talk, joint with J.D. Ward, given at the Eighth International Conference on Approximation Theory held in College Station, TX, January 8-12, 1995.
 27. "Density of Translates of Radial Functions on Compact Sets," a half-hour talk, joint with P.W. Smith and J.D. Ward, given at the Eighth International Conference on Approximation Theory held in College Station, TX, January 8-12, 1995.
 28. "Wavelets Associated with Periodic Basis Functions," a half-hour talk, joint with J.D. Ward, given at the Eighth International Conference on Approximation Theory held in College Station, TX, January 8-12, 1995.
 29. "An 'Uncertainty Principle' for the m -Sphere," a half-hour invited talk given at the Annual Symposium of the Center for Approximation Theory, Texas A&M University, College Station, TX, on April 21, 1995.
 30. "Spherical basis functions and intrinsic spherical wavelets," a half-hour invited talk given at the Session on Geodesy and Approximation Theory in Oberwolfach on October 4, 1995. The session was organized by W. Freeden. Local expenses paid by Oberwolfach.
 31. "A Framework for Interpolation and Approximation on a Riemannian Manifold," a half-hour invited talk given at the Annual Symposium of the Center for Approximation Theory, Texas A&M University, College Station, TX, on April 26, 1997.
 32. "The Multilevel Method: Rates of Approximation," a half-hour invited talk given at the 1997 IMACS Conference on Radial Basis Functions (held from 27-30 May 1997 in Monterey, CA. Funding source: AFOSR and TAMU Math Dept.
 33. "Remarks on Scattered-Data surface fitting via Positive Definite Kernels," a half-hour invited talk given at the Eilat98 Conference on Multivariate Approximation and Interpolation with Applications in CAGD, Signal and Image Processing, held from 7-11 September, 1998 in Eilat, Israel. Funding source: Israel and AFOSR overhead.
 34. "Recent Developments in Approximation via Positive Definite Functions," a one-hour invited address given at a plenary session of the 1998 International Conference on Approximation Theory, held from 3-6 January 1998 in Nashville, TN. Funding source: Conference.
 35. "Scattered data quadrature for spheres," a half-hour invited talk given at the Session on Mathematical Methods of Geodesy at the Mathematisches Forschungsinstitut Oberwolfach, 29 March-3 April 1999. The session was organized by W. Freeden, E. Grafarend, and L. Svensson. Local expenses paid by Oberwolfach.
 36. "Multiple source direction finding with reduced training and increased generalization," a twenty minute invited talk given at the Millenium Conference on Antennas & Propagation, held from 9-14 April 2000, Davos, Switzerland. Funding source: AFOSR.
 37. Research in Pairs (RiP) conference at the Mathematisches Forschungsinstitut Oberwolfach, joint with with R. Schaback and J. Ward, Oberwolfach, Germany, Aug. 6-19, 2000. Local expenses paid by Oberwolfach.
 38. "Scattered-Data Interpolation on Spheres: Locally Supported Basis Functions," a half-hour invited talk given at the Special Session on Sphere-Related Approximation and Applications at the AMS Chattanooga Meeting, 5-6 October 2001. (E. Saff and L.L. Schumaker, organizers). Funding source: AFOSR and TAMU Math. Dept.
 39. "Convergence of Radial Basis Function Interpolants and the Calderon Formula," an invited hour talk given on July 17, 2002, at the Workshop in Linear Analysis and Probability Department of Mathematics Texas A&M University, held from June 24 to July 19, 2002.
 40. "Error Estimates for Scattered-Data Interpolation via RBFs," an invited talk given on April 25, 2003, at the Third International Conference on Multivariate Approximation: Theory and Applications held from April 24 to April 29, 2003, at Cancun, Mexico. (C. Gout, C. Rabut, and L. Traversoni, organizers). Funding source: Conference organizers and NSF.
 41. "A New Class of Localized Frames on Spheres," Oberwolfach Workshop on Geomathematik - 23 - 29

- May 2004. Organizers: W. Freeden, Eric W. Grafarend, Ian H. Sloan, and Leif Svensson. Oberwolfach Report no. 27/2004. Half-hour invited talk. Funding source: Oberwolfach, NSF, TAMU Math. Dept.
42. “Localized Tight Spherical Frames,” Conference on “Interaction between Wavelets and Splines”, Athens, Georgia (May 16-19, 2005). Half-hour invited talk. Funding source: Oberwolfach, NSF, TAMU Math. Dept.
 43. “Approximation Power of RBFs on Surface Patches”, SIAM Conference on “Geometric Design and Computing”, Phoenix Arizona Oct. 31-Nov.3, 2005. Half-hour invited talk. Funding source: NSF, TAMU Math. Dept.
 44. “Sobolev Error Estimates for Scattered Data Interpolation on S^n ”, Robert Schaback Birthday Conference, Goettingen, November 26, 2005. (Joint with J. Ward) Half-hour invited talk. Funding source: KAMU video conference.
 45. “Positive-weight quadrature and localized tight spherical frames on spheres”, Mathematics colloquium, October 17, 2006, Sam Houston State University, Huntsville, TX. Funding source: Sam Houston State U.
 46. “Positive-weight quadrature and localized tight spherical frames on spheres”, Mathematics colloquium, November 16, 2006, U. of Utah, Salt Lake City, Utah. Funding source: U. of Utah.
 47. “A Bernstein Theorem for Spherical Basis Functions,” 12th International Conference on Approximation Theory, March 4-8, 2007, San Antonio, TX. Funding source: NSF and TAMU.
 48. “Divergence-free Radial Basis Functions on the Sphere,” Special session, “Radial Basis Functions on the Sphere for Geophysical Applications”, SIAM Conference on Mathematical & Computational Issues in the Geosciences, Switzerland, Santa Fe, NM, March 19-22, 2007. Funding source: NSF and TAMU.
 49. “Divergence-free RBFs on Spheres and other surfaces,” Special session, “Approximation on the Sphere”, ICIAM 07, Zurich, Switzerland, July 16-20, 2007. Funding source: NSF and TAMU.
 50. “Divergence-free RBFs on Spheres and other surfaces,” 2nd Workshop on Constructive Function Theory, Sam Houston State Univ., Oct. 26-27, 2007. Funding source: Sam Houston State Univ.
 51. “Bernstein inequalities and Nyquist sampling rates for spherical basis functions,” Third Workshop on Constructive Function Theory, Sam Houston State Univ., Oct. 24-25, 2008. Funding source: Sam Houston State Univ.
 52. “Bounded Lebesgue Constants for SBF Interpolation,” Seventh International Conference on Curves and Surfaces, Avignon, France, June 24-30, 2010. Funding source: NSF and TAMU.
 53. “ L_p Sobolev Estimates for Functions Vanishing at Discrete Points on a Lipschitz Domain on a Compact Manifold,” International Symposium in Approximation Theory, Vanderbilt University, Nashville, TN, May 17-21, 2011. Funding source: NSF and TAMU.
 54. “Kernel Based Quadrature on Spheres and Homogeneous Spaces,” Spring Western Section Meeting of the AMS, University of Hawaii at Manoa, Honolulu, HI, March 3-4, 2012. Funding source: NSF and TAMU.
 55. “Advances in Kernel Based Methods with Applications,” 14th International Conference on Approximation Theory, April 7–10, 2013, San Antonio, TX. Funding source: NSF.
 56. “Kernel Quadrature & Meshless Galerkin Methods on S^2 ,” 2013 SIAM Annual Meeting, Special session: Advances in Radial Basis Function and Other Meshfree Methods. July 8–12, 2013. San Diego, CA. Funding source: NSF.
 57. “A Novel Galerkin Method for Solving PDEs on the Sphere Using Highly Localized Kernel Bases,” Constructive Functions 2014 (Vanderbilt University). Special session: Cubature and Approximation. May 26-30, 2014. Nashville, TN. Funding source: NSF.
 58. “A Zeros Lemma for Riemannian Manifolds,” Erwin Schrödinger Institute (ESI) Program on Minimal Energy Point Sets, Lattices, and Designs. Workshop on Optimal Point Configurations and Applications. October 13–17, 2014. Vienna, Austria. Funding source: ESI, NSF.
 59. “Solving PDEs on the sphere via a novel kernel-based meshless Galerkin method,” 2015 SIAM Conference on Computational Science and Engineering. Special session: Advances in Radial Basis Function and Other Meshfree Methods. 14-18 March, 2015. Salt Lake City, UT. Funding source: NSF
 60. “A Meshless Kernel-Based Galerkin Method for Non-Local Diffusion, 15th International Conference on Approximation Theory,” May 22–25, 2016, San Antonio, TX. Funding source: NSF.
 61. “Localized Kernel Methods for Non-Local Diffusion,” 2017 SIAM Conference on Science & Engineering: Meshless Particle & Particle Methods for PDEs. February 27–March 3, 2017, Atlanta, GA. Funding

source: NSF.

62. “A Meshless Kernel Methods Galerkin Method for Non-Local Diffusion,” Ninth International Workshop: Meshfree Methods for Partial Differential Equations, September 18–20, 2017, Bonn. Funding source: NSF.
63. “Meshfree extrapolation with application to BBO (t, k) systems and non-local diffusion,” USACM Conference on Meshfree and Particle Methods: Applications and Theory, September 10-12, 2018, Santa Fe, NM. Funding source: NSF.
64. “Enhanced Meshfree Near-Boundary Approximation via Extrapolation,” Mini-symposium on Recent Advances in Kernel-based Approximation: 16th International Conference on Approximation Theory, May 19-22, 2019, Nashville, TN. Funding source: NSF
65. “Enhanced meshfree approximation and extrapolation with application to particle methods,” Mini-symposium on Meshfree, Peridynamics, and Particle Methods: Contemporary Methods and Applications, 2019 Engineering Mechanics Institute Conference, Pasadena, CA, June 18-29, 2019. Funding source: NSF.

GRANTS AND CONTRACTS

1. June 1, 1972 to July 15, 1973. “Atomic Excitation and Ionization in the Intermediate Energy Region”; Principal Investigator: John Reading. Funded by: Air Force Office of Scientific Research, Grant Number 73-2484.
2. July 18 to August 15, 1974. “A rigorous R-Matrix Theory,” Principal Investigator: F.J. Narcowich; Funded by: College of Science.
3. June 1, 1976 to November 30, 1977. “Indeterminate Hermitian Moment Sequences,” Principal Investigator: F.J. Narcowich; Funded by: National Science Foundation, Grant No. MCS576-06631.
4. August 1980. Consulted for Sage Data Corp., 234 Nassau St., Princeton, New Jersey 08540.
5. June 1981. Consulted for Sage Data, Inc. One Research Way, Princeton, New Jersey 08540.
6. Air Force Office of Scientific Research, Grant Number F49620-92-J-0403, “Surface Fitting with Radial Basis Functions and Applications to Neural Networks,” (J. D. Ward is co-PI.) August 14, 1992 to August 15, 1995, \$99,733.
7. Air Force Office of Scientific Research, Grant Number F49620-95-1-0194DEF, “Surface Fitting via Radial and Related Basis Functions with Applications to Neural Networks,” (J. D. Ward is co-PI.) March 1995 to March 1998, \$135,429. March 1, 1995 to February 28, 1998.
8. Air Force Office of Scientific Research, Grant Number F49620-98-1-0204DEF, “Surface Fitting via Radial and Related Basis Functions with Applications to Neural Networks,” (J. D. Ward is co-PI.) February 1, 1998 to September 30, 2000, \$143,800
9. National Science Foundation DMS-0204449, “New Directions in Scattered Data Analysis via Radial and Related Basis Functions” (J. D. Ward is co-PI.) August 1, 2002 to July 31, 2005, \$208,184.
10. National Science Foundation: DMS-0504353, “Scattered Data Analysis and Synthesis via Radial Basis Functions and Tight Spherical Frames” (J. D. Ward is co-PI.) August 1, 2005 to July 31, 2008, \$204,697.
11. National Science Foundation: DMS-0807033, “Scattered Data Analysis and Synthesis via Radial Basis Functions and Tight Spherical Frames” (J. D. Ward is co-PI.) August 15, 2008 to July 31, 2011, \$224,900.
12. National Science Foundation: DMS-0708470, “Approximation and Learning in High Dimensions” (conference). (PI: G. Petrova; Co-Pi’s: B. Popov, J. Zinn, J. Ward). July 1, 2007 to June 30, 2008. \$15,000.
13. Institute for Mathematics and Its Applications (IMA). “Approximation and Learning in High Dimensions” (conference grant). Co-organizers: Ron DeVore, Vladimir Koltchinskii, Francis Narcowich,, Bojan Popov, Steve Smale, Joe Ward, Joel Zinn. October 19-21, 2007. \$4,000.

14. National Science Foundation: DMS-1211566, "Localized Kernel Bases with Application to Meshless Methods" (F. J. Narcowich, co-PI; and J. D. Ward, PI). June 15, 2012 to May 31, 2015. \$229,455. (Included funding for graduate students for 3 summers.)
15. Sandia National Laboratory: Award Number 1271025, "Graduate Research Project for Stephen Rowe" (F. J. Narcowich, PI), August 1, 2012 to July 31, 2015. 75,000 *from Sandia* and 60,000 matching funds from TAMU.
16. National Science Foundation: DMS-151;1514789, "Localized Kernel Bases: Theory and Applications to Meshless Methods" (F. J. Narcowich, co-PI; and J. D. Ward, PI). August 15, 2015 to July 31, 2018. \$263,630. (Included funding for graduate students for 3 summers).
17. National Science Foundation: DMS-1813091: "Theory and Application of Localized Kernel Bases to Meshfree Methods" (F. J. Narcowich, co-PI; and J. D. Ward, PI). Sept 1, 2018 to Aug 31, 2021, \$230,812.

REVIEWING AND REFEREEING

Refereed for these journals & organizations:

Adv. in Computational Math.
 Appl. Comp. Harmonic Anal.
 Applied Mathematics and Computation
 BIT
 Constructive Approximation
 IEEE Transactions on signal Processing
 Foundations of Computational Mathematics
 IMA Journal of Numerical Analysis
 Int. J. on Sci. Computation and Modeling
 J. Approximation Theory
 J. Complexity
 J. Functional Analysis
 J. Fourier Analysis and Applications
 J. Math. Anal. Applic.
 J. Math. Phys.
 Journal of Mechanics of MATERIALS and STRUCTURES
 Mathematics of Computation
 Numerische Mathematik
 NSF
 SIAM Monograph
 SIAM J. Numerical Analysis
 SIAM J. on Scientific Computing
 Physics Letters A
 Physical Review Letters
 Physical Review A
 Signal Processing Transactions
 Transactions AMS
 Transport Theory and Stat. Phys.

TEACHING

COURSES TAUGHT

2nd Summer Session, 1972	407
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Spring, 1994	489
Summer I, 1994	308, 308, 485
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Spring, 1995	489
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Fall, 1997	617
Spring, 1998	311, 618
Fall, 1998	668
Spring, 1999	308, 312
Summer II, 1999	658
Fall, 1999	660
Spring, 2000	304, 414
Summer II, 2000	667 (VIGRE & REU)
Fall, 2000	601 (MEEN section)
Spring, 2001	308 (Honors), 414
Fall, 2001	412
Spring, 2002	414, 423
Summer II, 2002	658
Fall, 2002	603
Spring, 2003	414
Summer I, 2003	311
Fall, 2003	311 (Honors), 311
Spring, 2004	414 (Web), 414
Summer I, 2004	311
Fall, 2004	311 (NUEN section)
Spring, 2005	311 (Honors), 311
Summer I, 2005	409
Fall, 2005	641
Spring, 2006	311 (Honors), 642
Summer I, 2006	311
Fall, 2006	641
Spring, 2007	311, 642
Summer I, 2007	311
Fall, 2007	641
Spring, 2008	251, 642
Summer I, 200	311
Fall, 2008	658
Spring, 2009	414, 601
Summer I, 2009	308, 308
Fall, 2009	641
Spring, 2010	414, 642

Summer II, 2010	304
Fall, 2010	641
Spring, 2011	308, 642
Summer II, 2011	412
Fall, 2011	641
Spring, 2012	414, 642
Summer I, 2012	311
Fall, 2012	658
Spring, 2013	401-501, 401-502
Fall, 2013	641
Spring, 2014	414, 642
Summer I, 2014	308, 409
Fall, 2014	641
Spring, 2015	414, 642, 491, 691
Summer I, 2015	308, 409
Fall, 2015	641
Spring, 2016	414, 642
Summer I, 2016	311, 685
Fall, 2016	641
Spring, 2017	414, 642
Summer II, 2017	685
Fall, 2017	641
Spring, 2018	414, 642
Summer II, 2018	685
Fall, 2018	641
Spring, 2019	414, 642
Fall, 2019	641
Spring, 2020	414, 642
Fall, 2020	641
Spring, 2021	414, 642
Fall, 2021	641

STUDENT COMMITTEES

A. MASTERS

1. Beacht, R.W. (Math)*
2. Chang, Chien M. (E.E.)*
3. Nghi, Nguyen X. (M.E.)*
4. Qaimmaqami, Hassan (M.E.)*
5. Reed, Lynn G. (E.E.)*
6. Voges, Kermit Peyton (Math)*
7. Ting, Yine-Ping (N.E.)*
8. Brown, Thomas L. (M.E.)*
9. Poniz, Philip (Math)*
10. Hansen, Elizabeth (C.S.)*
11. Colloway, Terry (E.E.)*
12. Meeks, Walter (N.E.)*
13. Wojcik, Lynn (N.E.)*
14. Greene, Bob (N.E.)*
15. Juneau, Jon (Math-Chairman)*
16. Marvit, Ruvane S. (Math-Chairman)*

*Degree has been given

17. Bratton, Robert (N.E.)*
18. Mabry, Vicki (Statistics)*
19. Schuller, Michael (N.E.)*
20. Hughes, K.L. (Phys.)*
21. Hong, Chi-Ho (Phys.)*
22. Bakich, Michael (Math-Chairman, Thesis)* (5/92)
23. Stoerkel, Elizabeth (Math-Chairman)* (5/92)
24. Sackett, Ginger (Bio. Eng.)* (5/92)
25. Mock, Scott E. (Math)*
26. Patten, Thomas P. (M.E.)
27. Sharif Sazzad, (E.E.)*
28. Van Thuan Ho, (E.E)* (12/97)
29. Minh, Can A., (Math)* (5/99)
30. Reuter, Kevin, (Visualization)* (8/99)
31. Gia Le, Quoc Thong (Math.)* (8/00)
32. Zhao, Caixia (Statistics) * (12/00)
33. Krcmar, Maja (Physics) * (5/01)
34. Li, Bo (Stat.) * (4/9/04)
35. Ayala, Julio (E.E) * (12/05)
36. Guild-Bingham, Avery (NUEN)* (12/04)
37. Glab, Daniel L. (Stat.) * (12/05)
38. Dressler, James B. (Math.-dist.)
39. Le, Ty (Math.-dist.-Chairman)* (12/05)
40. Black, Rebecca (Math-dist.)* (5/06)
41. Owens, Jennifer (Math.)* (8/06)
42. Fu, Kaibin (Math.)*(5/07)
43. Johnson, Maya (Math.)*(8/08)
44. Yang, Mei (Math.)*(8/09)
45. Johnson, Kristen (AERO)*(8/10)
46. Zarea, Marwan (PETE)*(8/10)
47. Hoskins, Philip (Math.)*(5/15)
48. Keith, Kolton (Math.)*(5/18)
49. Wiseman, Benjamin (E.E)*(8/18)
50. Kumar, Namita Amir (Math-Chairman) *(12/21)

B. PH.D.

1. Burnett, Thomas (Physics)*
2. Chase, David (Parks and Recreation)*
3. Lawrence, William R. (Physics)*
4. Lumpkin, Milton (Physics)*
5. Bottiger, Jerold (Physics)*
6. Roberts, George (Math)*
7. Frey (Anderson), Gail (Economics)*
8. Beres, Richard R. (Physics)*
9. Cunningham, Sammy (Biochemistry)[†]*
10. Su, Lo-Yung (Math)*
11. Burciaga, John (Physics)*
12. Watanabe, Ronald Ken (Ocean Eng.)[†]*
13. Schuller, M. (N.E.)*
14. Smoote, S. (Ed. Phys.)[†]*
15. Ham, Tom (Physics)*

*Degree has been given

[†]Graduate College Representative

16. Steward, Harold (Ed. Admi.)^{†*}
17. Campanhola, Clayton (Entomology)^{†*}
18. Peterson, Sandra (EDCI)^{†*}
19. Johnson, Iris (EDCI)^{†*}
20. Schehrer, Kevin (Phys.)*
21. Moore, Murray (M.E.)*
22. Chiang, Jen-Shiun (E.E.)^{†*}
23. Choi, Sang K. (M.E.)*
24. Crossman, Leslie (Ed. Phys.)^{†*}
25. Fan, Beijan (M.E.)*
26. Venkatesh, Ramasubbu (N.E.)*
27. Wagner, Drew (Finance)* (4/1/97)
28. Dahr, Amitava (M.E.)* (2/14/95)
29. Hsu, Cheng-non (C.E.)^{†*} (3/17/97)
30. Lee, Geung Hee (Stat.) * (11/27/96)
31. Valayutham Rajaathnam, (E.E.)[†]
32. Lowitzsch, Svenja (Math. – co-chair)* (5/02)
33. Gia Le, Quoc Thong (Math. – co-chair)* (8/03)
34. Krcmar, Maja (Physics)* (12/01)
35. Dunlap, Mickey P. (Stat.)* (8/04)
36. Ambartsoumian, Gaik (Math.)* (8/06)
37. Fuselier, Edward (Math. – co-chair)* (5/06)
38. Ward, John Paul (Math. – co-chair)* (8/10)
39. Glab, Daniel L. (Stat.)* (12/10)
40. SenGupta, Indranil (Math.) * (5/10)
41. Gou, Kun (Math.)* (12/12)
42. Ferguson, Lauren Ann (Math.)* (12/12)
43. Ghosh, Aditi (Math.)* (8/13)
44. Johnson, Maya (Math.)* (8/15)
45. Subhadeep, Mukhopadhyay (Stat.)
46. Rowe, Stephen (Math. – co-chair)* (5/15)
47. Hamm, Keaton (Math.)* (8/15)
48. Dallakyan, Aramayis (Stat.)* (12/21)

SERVICE ACTIVITIES

DEPARTMENTAL AND COLLEGE

- | | |
|-------------------|--|
| 1972-1973: | (a) Undergraduate Major Curriculum Committee
(b) Applied Mathematical Sciences Committee
(c) Calculus Sequence Committee |
| 1973-1974: | (a) Undergraduate Major Curriculum Committee
(b) Applied Mathematical Sciences Committee
(c) Colloquium and Seminar Committee
(d) Complex Analysis Committee
(e) Mathematics for Physical Sciences Committee |
| 1974-1975: | (a) Undergraduate Major Curriculum Committee
(b) Applied Mathematical Sciences Committee
(c) Complex Analysis Committee
(d) Math Department representative on the College of Engineering Graduate Instruction Committee |
| 1975-1976: | (a) Applied Mathematical Sciences Committee
(b) Graduate Major Curriculum Committee
(c) Mathematical Physics Committee |

- (d) Math Department representative on the College of Engineering Graduate Instruction Committee
- 1976-1977:**
 - (a) Applied Mathematical Sciences Committee
 - (b) Graduate Major Curriculum Committee
 - (c) Mathematical Physics Committee
 - (d) Math Department representative on the College of Engineering Graduate Instruction Committee
 - (e) Executive Committee
- 1977-1978:**
 - (a) Applied Mathematical Sciences Committee
 - (b) Graduate Major Curriculum Committee
 - (c) Mathematical Physics and Probability Committee
 - (d) Math Department representative on the College of Engineering Graduate Instruction Committee
 - (e) Executive Committee
- 1978-1979:**
 - (a) Executive Committee (Chairman)
 - (b) Faculty Evaluation Committee
- 1979-1980:**
 - (a) Executive Committee (Chairman)
 - (b) Faculty Evaluation Committee
- 1980-1981:**
 - (a) Committee E
- 1981-1982:**
 - (a) Committee T
 - (b) Tenure Guidelines Committee
- 1982-1983:**
 - (a) Committee T
 - (b) Recruitment Committee
- 1983-1984:**
 - (a) Committee T
 - (b) Ad-hoc Committee to revise the syllabi of the Engineering Calculus Courses
- 1984-1985:**
 - (a) Annual Reviews Committee for the division of Geometry and Nonlinear Analysis
 - (b) Committee T
 - (c) Ad-hoc Committee to select a calculus text in M151 sequence
 - (d) Teaching awards committee
- 1986-1987:**
 - (a) Committee T
 - (b) Curriculum Review Committee
- 1987-1988:**
 - (a) Committee T
 - (b) Undergraduate Committee
- 1988-1989:**
 - (a) Committee T
 - (b) P&T Steering Committee (Chairman)
 - (c) College of Science FAC
 - (d) Undergraduate Committee
- 1989-1990:**
 - (a) Committee T
 - (b) Committee P
 - (c) Committee P's Subcommittee on Promotion (Chairman)
 - (d) Committee on Department Rules for P&T and Senior Appointments (Chairman)
 - (e) College of Science FAC (Chairman)
 - (f) Undergraduate Committee
- 1990-1991:**
 - (a) Committee T
 - (b) Committee P

- (c) Committee P's Subcommittee on Promotion (Chairman)
 - (d) Committee on Department Rules for P&T and Senior Appointments (Chairman)
 - (e) College of Science FAC (Chairman)
 - (f) Engineering Mathematics Text-Book Committee (Chairman)
 - (g) Ad-hoc Committee to Select a Delegate to the Dean-Search Committee (Chairman)
 - (h) Executive Committee
- 1991-1992:**
- (a) Committee T
 - (b) Committee P
 - (c) Engineering Mathematics Text-Book Committee (Chairman)
- 1992-1993:**
- (a) Committee T
 - (b) Committee P
 - (c) Engineering Mathematics Text-Book Committee (Chairman)
- 1993-1994:**
- (a) Committee T
 - (b) Committee P
 - (c) Undergraduate Program Committee
 - (d) Awards Committee
- 1994-1995:**
- (a) Committee T
 - (b) Committee P
 - (c) Subcommittee P
 - (d) Awards Committee
 - (e) Hiring Committee
- 1995-1996:**
- (a) Committee T
 - (b) Committee P
 - (c) Subcommittee P
 - (d) Awards Committee (Chair)
 - (e) Differential equations textbook committee 1996
- 1996-1997:**
- (a) Committee T
 - (b) Committee P
 - (c) Associate Director, Center for Approximation Theory
- 1997-1998:**
- (a) Committee T
 - (b) Committee P
 - (c) Associate Director, Center for Approximation Theory
 - (d) Subcommittee P
- 1998-1999:**
- (a) Committee T
 - (b) Committee P
 - (c) Associate Director, Center for Approximation Theory
 - (d) Subcommittee P
 - (e) Graduate program evaluation committee (chair)
- 1999-2000:**
- (a) Committee T
 - (b) Committee P
 - (c) Associate Director, Center for Approximation Theory
 - (d) Executive Committee
- 2000-2001:**
- (a) Committee T
 - (b) Committee P
 - (c) Associate Director, Center for Approximation Theory
 - (d) Executive Committee
- 2001-2002:**
- (a) Committee T
 - (b) Committee P

- (c) Associate Director, Center for Approximation Theory
- (d) P&T Document Revision Committee
- (e) Subcommittee P
- 2002-2003:**
 - (a) Committee T
 - (b) Committee P
 - (c) Director, Center for Approximation Theory
 - (d) Subcommittee P
 - (e) Graduate Committee
- 2003-2004:**
 - (a) Committee T
 - (b) Committee P
 - (c) Director, Center for Approximation Theory
 - (d) Executive Committee
 - (e) Math 311 Textbook Committee (chair)
 - (f) Graduate Committee
 - (g) Subcommittee P
- 2004-2005:**
 - (a) Committee T
 - (b) Committee P
 - (c) Director, Center for Approximation Theory
 - (d) Executive Committee
- 2005-2006:**
 - (a) Committee T
 - (b) Committee P
 - (c) Director, Center for Approximation Theory
 - (d) Teaching Committee (chair)
- 2006-2007:**
 - (a) Committee T
 - (b) Committee P
 - (c) Director, Center for Approximation Theory
 - (d) Teaching Committee (chair)
 - (e) Tenure and Promotion Advisory committee (College of Science)
- 2007-2008:**
 - (a) Committee T
 - (b) Committee P
 - (c) Director, Center for Approximation Theory
 - (d) Tenure and Promotion Advisory committee (College of Science)
- 2008-2009:**
 - (a) Committee T
 - (b) Committee P
 - (c) Director, Center for Approximation Theory
 - (d) Tenure and Promotion Advisory committee (College of Science)
- 2009-2010:**
 - (a) Committee T
 - (b) Committee P
 - (c) Director, Center for Approximation Theory
 - (d) Engineering Mathematics Committee
- 2010-2011:**
 - (a) Committee T
 - (b) Committee P
 - (c) Director, Center for Approximation Theory
 - (d) Engineering Mathematics Committee
- 2011-2012:**
 - (a) Committee T
 - (b) Committee P
 - (c) Director, Center for Approximation Theory
 - (d) Engineering Mathematics Committee
 - (e) Executive Committee
- 2012-2013:**
 - (a) Committee T

- (b) Committee P
 - (c) Director, Center for Approximation Theory
 - (d) Engineering Mathematics Committee
 - (e) Executive Committee
- 2013-2014:**
- (a) Committee T
 - (b) Committee P
 - (c) Director, Center for Approximation Theory
 - (d) Engineering Mathematics Committee
 - (e) Executive Committee
- 2014-2015:**
- (a) Committee T
 - (b) Committee P
 - (c) Director, Center for Approximation Theory
 - (d) Engineering Mathematics Committee
- 2015-2016:**
- (a) Committee T
 - (b) Committee P
 - (c) Director, Center for Approximation Theory
 - (d) Engineering Mathematics Committee
- 2016-2017:**
- (a) Committee T
 - (b) Committee P
 - (c) Director, Center for Approximation Theory
 - (d) Teaching Committee
- 2017-2018:**
- (a) Committee T
 - (b) Committee P
 - (c) Director, Center for Approximation Theory
 - (d) Teaching Committee (chair)
- 2018-2019:**
- (a) Committee T
 - (b) Committee P
 - (c) Director, Center for Approximation Theory
- 2019-2020:**
- (a) Committee T
 - (b) Committee P
 - (c) Director, Center for Approximation Theory
 - (d) Executive Committee
- 2020-2021:**
- (a) Committee T
 - (b) Committee P
 - (c) Director, Center for Approximation Theory
 - (d) Executive Committee