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Vitae

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Born: January 15, 1936 in Howrah, West Bengal, India.
Married 1966; one child.
Naturalized May 1, 1985.

EDUCATION, PROFESSIONAL TRAINING AND REGISTRATION

B.Sc., Mathematics (Hons), Presidency College, Calcutta, India, 1954.

M.Sc., Applied Mathematics, Calcutta University, Calcutta, 1956.

Ph.D., Applied Mathematics, Jadavpur University, Calcutta, 1962.

PROFESSIONAL EXPERIENCE

Teaching and Research, Jadavpur University, 1957-1958.

Teaching and Research, Calcutta Technical School, 1958-1962.

Visiting Lecturer, Research, University of Wisconsin, Madison, 1962-1963.

Post-doctoral fellowship, Rensselaer Polytechnic Institute, Troy, 1963-1964.

Visiting Assistant Professor of Aerospace Sciences, University of Colorado, Boulder, 1964- 1965.

Assistant Professor, Indian Institute of Technology (Kanpur), 1965-1967.

Assistant Professor, University of Manitoba, 1967-1968.

Assistant Professor, Mechanical Engineering Department, University of Colorado, Boulder, 1968-1969.

Associate Professor, Mechanical Engineering Department, University of Colorado, Boulder, 1969-1973.

Professor, Mechanical Engineering Department, University of Colorado, Boulder, 1973-2007.

Chair, Mechanical Engineering Department, University of Colorado, Boulder, 1995-2004.

Professor Emeritus, Mechanical Engineering Department, University of Colorado, Boulder, 2007-.

Fellow, Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder, 1982-1994.

Professor and Head, Mechanical Engineering Department, University of Connecticut, Storrs, 1991-1992.

Engineer (IPA), Division of Engineering and Geosciences, Office of Basic Energy Sciences, US Department of Energy, Washington, January, 1993-August, 1994.

PROFESSIONAL ACTIVITIES

Consultant, Engineering Measurements Company, Boulder, Colorado, 1972-1973.

Visiting Professor, Department of Mathematics, Panjab University, Chandigarh, September-December, 1972.

Visiting Professor, Center of Advanced Study in Applied Mathematics, Calcutta University, June-August, 1976.

Consultant, Institute of Physical Medicine and Rehabilitation, Peoria, Illinois, 1976-1978.

Consultant, Fracture & Deformations Division, NIST, Boulder, CO, 1979_ 1991.

Professor, Department of Applied Mathematics, Calcutta University (on sabbatical leave from the University of Colorado), September 1979-May 1980.

Visiting Professor, Department of Civil Engineering, University of Queensland, Brisbane, QLD, October-November, 1999.

PROFESSIONAL SERVICE

Associate Editor, Journal of Applied Mechanics, 1989-1993.

Associate Editor, Composites Engineering, 1991-2002.

Associate Editor, Applied Mechanics Reviews, 1985-1990, 1995-2001.

Associate Editor, ASME Journal of Engineering Materials and Technology, 1993-2000, 2002 - present.

Referee: Journal of Applied Mechanics, Journal of Elasticity, Journal of the Acoustical Society of America, International Journal of Solids and Structures, Journal of Applied Physics, International Journal of Earthquake Engineering and Structural Dynamics, Wave Motion, Journal of the Mechanics and Materials Science.

Reviewer: Zentralblatt für Mathematik, 1965-1989, Applied Mechanics Reviews, 1976-1984.

Chairman, Editorial Committee for the Seventh U. S. National Congress of Applied Mechanics, 1974.

Reviewer for the National Science Foundation Division of Civil and Mechanical Systems.

NSF Panel for review of proposals submitted to the Division of Civil and Mechanical Systems, January, 1999.

NRC Panel for review of AFOSR Mechanics Program proposals, 1995 - 1998.

Member, Aerospace/Energy Research and Education Program Advisory Board, Southern University, 1994 -1998.

Member, International Advisory Committee, 14th World Conference on NDT, 1995-96.

Board of Directors, American Academy of Mechnaics, January 1999-2004.

Secretary to the Fellows of the American Academy of Mechanics, January 2003 - 2005.

Member, Executive Committee, ASME NDE Division, 2001 -.

SOCIETY MEMBERSHIP

American Society of Mechanical Engineers, 1972-. (Fellow)

Pi Tau Sigma

Sigma Xi

American Academy of Mechanics, 1973-. (Fellow)

Society of Engineering Science, 1973- 1990.

Seismological Society of America, 1990- 2000.

HONORS, AWARDS AND GRANTS

Research Award, Department of Mechanical Engineering, University of Colorado, Boulder, 1995.

"Electromechanical Behavior of High- T_c Superconducting Tapes", Department of Energy, \$304,000, November 1, 1996 - October 31, 1999.

"Linear and Nonlinear Ultrasonics for Microstructure NDE", Department of Energy, \$324,000, November 1, 1999-October 31, 2002.

Faculty Fellowship for the academic year 1999-2000, CRCW, University of Colorado-Boulder.

"Grant-in-Aid associated with the Faculty Fellowship awarded by CRCW, University of Colorado-Boulder, \$4,000, September 1, 1999 - August 31, 2000.

"Ultrasonic Guided Waves and Scattering by Stress-Corrosion Cracks in a Coal-Tar-Coated Steel Plate", TD Williamson, Inc., \$147,955, January 1 -June 30, 1997.

"Nondestructive Evaluation of Cylindrical Storage Tanks Using Guided Ultrasonic Waves", Colorado Advanced Materials Institute, \$99,811, March 1, 1996 - February 28, 1997 (Faculty Researcher).

"IPA Grant", US Department of Energy, January 1, 1993-August 31, 1994.

"Dynamic Behavior of Fiber and Particle Reinforced Composites", Office of Naval Research Contract, \$183,376, April 23,1986-April 22, 1988; \$284,350, April 23,1988-December 31,1990; \$145,243, January 1,1991-December 31,1991; \$60,000, January 1,1992-December 31,1992.

Center for Space Construction, NASA, \$2.6M, March 1,1990-February 28,1992.
(Co_Investigator)

"Ultrasonic Scattering in Composite Laminates", Max Kade Foundation, \$25,000, June 1,1991-May 31,1992.

"Through-Transmission Gas and Pulsed Water_Coupled Microscopy of Electronic Packaging and Composite Materials", NIST, \$210,000, August 1,1990-July 31,1991.

"Experimental Research Facility for Ultrasonic Nondestructive Evaluation of Structural Materials", National Science Foundation, \$21,000, June 1,1990-Novemehr 30,1991.

"Dynamic Amplification of Surface Ground Motion and the Response of Buried Pipelines and Tunnels to Earthquake Loading", National Science Foundation Grant, \$149,180, May 1, 1986-Oct. 31,1988.

"Theoretical and Experimental Study of Diffraction of Elastic Waves in Thick Plates", \$208,814, Sept. 1, 1986-Feb. 28,1989.

"US_Ireland Cooperative Science: A Theoretical Study of Diffraction of Elastic Waves in Layered Anisotropic Medium", National Science Foundation Grant, \$9,100, Sept. 1, 1986-Feb. 29,1988.

"U.S.-Sweden Cooperative Science: A Theoretical Study of Diffraction of

Elastic Waves in Layered Anisotropic Medium", National Science Foundation, \$7,434, May 1, 1987-Oct. 31, 1988.

"Response of Buried Pipelines to Seismic Waves", National Science Foundation Grant, \$46,675 for the period Oct. 1, 1983-March 31, 1985. Supplement, \$5,000 for Oct. 1, 1984-Sept. 30, 1985.

"Stress Wave Propagation in a Nonhomogeneously Prestressed Medium", National Bureau of Standards, grant \$9,078.00 for the period June 1, 1983-September 30, 1983.

"Response of Buried Pipelines to Seismic Waves", National Science Foundation Grant \$53,431 for the period April 1, 1982-September 30, 1983.

"Research on Elastic Properties and Fracture Mechanics", National Bureau of Standards grant \$9,999 for the period April 15, 1982-August 31, 1982.

"Diffraction of Elastic Waves in a Half-Space", National Science Foundation grant \$89,421 for two years starting January 1, 1980.

"Response of Submerged Shells to Seismic Waves," National Science Foundation grant \$30,000.00 for one year starting January 1, 1979.

"Wave Propagation in Solid Bodies." A grant of \$50,000.00 received from National Science Foundation, September 1, 1976-August 31, 1979.

"Wave Propagation in Solid Bodies" (Co_principal Investigator: Professor W. E. Jahsmann). A total grant of \$152,300.00 was awarded by the National Science Foundation, May 1970-April 1976.

An award of \$2,350.00 was made on June 30, 1976 by the National Science Foundation under the U.S.-India Exchange of Scientists program.

A grant of \$10,000 was received from IBM, Boulder, to study "Stability of a Tape Web Hanging in an Airstream" in 1973 (Co-principal Investigator: W. G. Gottenberg).

Faculty Fellowship for the Fall Semester 1973, by the University of Colorado Council on Research and Creative Work.

College of Engineering and Applied Science Faculty Research Award, 1984.

Fulbright Award, 1962.

Faculty Fellowship for the academic year 1986-87, by the University of Colorado Council on Research and Creative Work.

Fulbright Research Scholar in Austria, September 1-December 31, 1986.

National Academy of Sciences Interacademy exchange visit to USSR, May 1, 1987.

Elected Fellow of the American Society of Mechanical Engineers, 1984.

Elected Fellow of The American Academy of Mechanics, 1987.

Listed in:

Who's Who in America

Books Published

Book Titled, Wave Propagation in Composite Media and Structures:with Applications to Ultrasonic Nondestructive Evaluation, by S.K. Datta and A.H. Shah, CRC Press, ISBN: 978-1-4200-5338-8, 2009.

PUBLICATIONS(1990_)

Peer Reviewed Journal

1. "Acoustic Phonon Dispersion in Nanowires," O.M. Mukdadi, S.K. Datta, and M.L. Dunn, Journal of Applied Physics, 97(2005), pp. 074313(1-13).
2. "Laser-Generated Thermoelastic Waves in an Anisotropic Infinite Plate," H.M. Al-Qahtani, S.K. Datta, and O.M. Mukdadi, Journal of Thermal Stress, 28(2005), 1099-1122.
3. "Thermoelastic Waves in an Anisotropic Infinite Plate," H. Al-Qahtani and S.K. Datta, Journal of Applied Physics, 96(2004), 3645-3658.
4. "Transient Ultrasonic Waves in Layered Plates with Rectangular Cross Section," O.M. Mukdadi and S.K. Datta, Journal of Applied Physics, 93(2003), 9360-9370.
5. "Nonlinear Flexural Waves in Thin Layers," O.M. Mukdadi and S.K. Datta, Journal of Sound and Vibration, 263(2003), 1031-1046.
6. "On Transient Ultrasonic Waves in a Homogeneous Plate with Thin Superconducting Coating Layers", A.J. Niklasson and S.K. Datta, Int. J. Solids and Str., 39(2002), 5515-5528.
7. "Scattering of Guided Waves by Circumferential Cracks in Composite Cylinders", H. Bai, A.H. Shah, N. Popplewell, and S.K. Datta, Int. J. Solids and Str., 39(2002), 4583-4603.
8. "Elastic Guided Waves in a Layered Plate with Rectangular Cross Section", O.M. Mukdadi, S.K. Datta, and M.L. Dunn, ASME J. Pressure Vessel Tech., 124(2002), 319-325.
9. "Elastic Guided Waves in a Layered Plate with Rectangular Cross Section", O.M. Mukdadi, Y.M. Desai, S.K. Datta, A.H. Shah, and A.J. Niklasson, J. Acoust. Soc. Am., 112(2002), 1766-1779.
10. "Transient Ultrasonic Waves in Multilayered Superconducting Plates", J. Appl. Mech., 69(2002), 811-818.
11. "Scattering of Guided Waves by Circumferential Cracks in Steel Pipes", H. Bai, A.H. Shah, N. Popplewell, and S.K. Datta, Journal of Applied Mechanics, 68(2001), 619-631.
12. "Off-Axis Propagation of Ultrasonic Guided Waves in Thin Orthotropic Layers: Theoretical Analysis and Dynamic Holographic Imaging Measurement", O.M. Mukdadi, S.K. Datta, K.L. Telschow, and V.A. Deason, IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, 48(2001), 1581-1593.

13. "On Approximating Guided Waves in Plates with Thin Anisotropic Coatings by Means of Effective Boundary Conditions", A.J. Niklasson, S.K. Datta, and M.L. Dunn, *Journal of the Acoustical Society of America*, 108(2000), 924-933.
14. "On Ultrasonic Guided Waves in a Thin Anisotropic Layer Lying between Two Isotropic Layers", A.J. Niklasson, S.K. Datta, and M.L. Dunn, *Journal of the Acoustical Society of America*, 108(2000), 2005-2011.
15. "Ultrasonic Waves in Multilayered Superconducting Plates", E. Pan and S.K. Datta, *Journal of Applied Physics*, 86(1999), 543-551.
16. "Ultrasonic Waves and Material and Defect Characterization in Composite Plates", *Mechanics of Composite Materials and Structures*, 6(1999), 285-300.
17. "Mode Selection of Guided Waves for Ultrasonic Inspection of Gas Pipelines with Thick Coating", E. Pan, J. Rogers, S.K. Datta, and A.H. Shah, *Mechanics of Materials*, 31(1999), 165-174.
18. "Transient Response of a Composite Plate with Delamination", J. Zhu, A.H. Shah, and S.K. Datta, *ASME Journal of Applied Mechanics*, 65(1998), 664-670.
19. "Scattering by an Infinite Transversely Isotropic Cylinder in a Transversely Isotropic Medium", A.J. Niklasson and S.K. Datta, *Wave Motion*, 27(1998), 169-185.
20. "Axisymmetric Guided Waves in Jointed Composite Laminated Cylinders", N. Rattanawangcharoen, W. Zhuang, A.H. Shah, and S.K. Datta, *ASCE J. Eng. Mech.*, 123(1997), 1020-1026.
21. "Axisymmetric Guided Wave Scattering by Cracks in Welded Steel Pipes", W. Zhuang, A.H. Shah, and S.K. Datta, *J. Pressure Vessel Technology*, *ASME Transactions*, 119(1997), 401-406.
22. "Surface Wave Scattering by a Material Interphase between Two Edge Bonded Plates", W. Karunasena, A. H. Shah, and S. K. Datta, *Wave Motion*, 21(1995) (Special issue dedicated to late Julius Miklowitz), 5 - 15.
23. "Modal Representation of Two-Dimensional Elastodynamic Green's Functions", J. Zhu, A. H. Shah, and S. K. Datta, *J. Eng. Mech.*, 121(1995), 26-36.
24. "Effect of Interface Layers on Elastic Wave Propagation in a Metal Matrix Composite Reinforced by Particles", Y. Shindo, H. Nozaki, and S. K. Datta, *J. Appl. Mech.*, 62(1995), 178-185.
25. "Ultrasonic Wave Propagation through a Cracked Solid", A. S. Eriksson, A. Bostrom, and S. K. Datta, *Wave Motion*, 22(1995), 297-310.
26. "Fiber-Matrix Interphase and Guided Waves in a Composite Cylinder", N. Rattanawangcharoen, P. Ngotasawan, S. K. Datta, and A. H. Shah, *Composites Eng.*, 5(1995), 663-674.
27. "Elastic Properties of Particle-Occlusion Composites: Measurements and Modeling", H. M. Ledbetter, S. Datta, and M. Dunn, *J. Eng. Mat. Tech.*, 117(1995), 402-407.
28. "Floquet Analysis of Guided Waves Propagating in Periodically Layered Composites", A. Safaeinili, D. E. Chimenti, B. A. Auld, *Composites Eng.*, 5(1995), 1471-1476.
29. "Modal Representation of Transient Dynamics of Composite Plates", J. Zhu, S. K. Datta, and A. H. Shah, *Composites Eng.*, 5(1995), 1477-1487.
30. "Elastic Guided Waves and the Floquet Concept in Periodically Layered Plates", P. J. Shull, D. E. Chimenti and S. K. Datta, *Journal of the*

- Acoustical Society of America, 95(1)(1994),99-108.
31. "Guided Waves in a Jointed Composite Plate", W. Karunasena, A. H. Shah, and S. K. Datta, Journal of the Acoustical Society of America, 95(3)(1994),1206-1212.
 32. "Reflection of Waves at the Free Edge of a Laminated Composite Cylinder", N. Rattanawangcharoen, A. H. Shah, and S. K. Datta, 61(1994),323-329.
 33. "Nonaxisymmetric Guided Waves in a Composite Cylinder with Transversely Isotropic Core", N. Rattanawangcharoen, S. K. Datta, and A. H. Shah, Geophysical Journal International, 118(1994), 317-323.
 34. "Scattering of Ultrasonic Waves by Cracks in a Plate", S. W. Liu and S. K. Datta, Journal of Applied Mechanics, 60(1993),352-357.
 35. "Pulse Propagation in a Laminated Composite Plate and Nondestructive Evaluation", T. H. Ju and S. K. Datta, Composites Engineering, 2(1992), 55-66.
 36. "Transient Response of a Laminated Plate: Results from Homogenization and Discretization", S. K. Datta, T. H. Ju, R. L. Bratton and S. K. Datta, International Journal of Solids and Structures, 29(1992), 1711-1721.
 37. "Scattering of an Impact Wave by a Crack in a Composite Plate", S. K. Datta and T. H. Ju, Journal of Applied Mechanics, 59(1992), 596-603.
 38. "Wave Propagation in Laminated Composite Circular Cylinder", N. Rattanawangcharoen, A. H. Shah and S. K. Datta, International Journal of Solids and Structures, 29(1992), 767-781.
 39. "Mode Coupling of Waves in Laminated Tubes", T. Kohl, S. K. Datta, A. H. Shah and N. Rattanawangcharoen, Journal of Composite Materials, 26(1992), 661-682.
 40. "Cast Iron Elastic Constants: Effect of Graphite Aspect Ratio", H. M. Ledbetter and S. K. Datta, Zeitschrift für Metallkunde, 83(1992), 195-198.
 41. "Axially Symmetric Pulse Propagation in Semi-Infinite Hollow Cylinder", T. Kohl, S. K. Datta and A. H. Shah, AIAA Journal, 30(1992), 1617-1624.
 42. "Effective Plane Wave Propagation through a Medium with Spheroidal Inclusions Surrounded by Thin Interface Layers", A. Boström, P. Olsson and S. K. Datta, Mechanics of Materials, 14(1992), 59-66.
 43. "Dynamics of a Composite Plate with Interface Layers", T. H. Ju and S. K. Datta, Journal of Nondestructive Evaluation, 11(1992), 227-235.
 44. "Characterization of Fiber-Matrix Interface by Guided Waves: Axisymmetric Case", P. C. Xu and S. K. Datta, Journal of the Acoustical Society of America, 89(1991), 2573-2583.
 45. "Transient Scattering of Rayleigh-Lamb Waves by a Surface-Breaking Crack: Comparison of Numerical Simulation and Experiment", S.W. Lu, S.K. Datta, and T.H. Ju, Journal of Nondestructive Evaluation, 10(1991), 111-126.

46. "Scattering of Lamb Waves by a Normal Strip Weldment", Y. N. Al_Nassar, S. K.Datta and A. H. Shah, *Ultrasonics*, 29(1991), 125-132.
47. "Amplification of Obliquely Incident Seismic Waves by Cylindrical AlluvialValley of Arbitrary Cross_Sectional Shape. Part II. Incident SH and RayleighWaves", *Bulletin of the Seismological Society of America*, 81(1991), 346-357.
48. "Dynamic Response of a Layered Half_Space with Interfacial Cracks", M. Bouden,S. K. Datta and A. H. Shah, *International Journal of Solids and Structures*, 28(1991), 533-548.
49. "Transient Response of Ground Surface due to Incident SH Waves", S. W. Liu and S. K. Datta, *Computational Mechanics*, 8(1991), 99-109.
50. "Plane Strain Wave Scattering by Cracks in Laminated Composite Plates", W. M. Karunasena, A. H. Shah and S. K. Datta, *ASCE Journal of Engineering Mechanics*,117(1991), 1738-1754.
51. "Dynamic Response of Pipelines Buried in Back-Filled Trenches", S. W. Liu, S.K. Datta, K. R. Khair and A. H. Shah, *ASME Journal of Pressure Vessel Technology*, 113(1991), 429-436.
52. "Wave Propagation in a Multilayered Laminated Cross-Ply Composite Plate", W.Karunasena, A. H. Shah and S. K. Datta, *Journal of Applied Mechanics*,58(1991), 1028-1032.
53. "Rayleigh and Love Waves in Cladded Anisotropic Medium", M. Bouden and S. K. Datta, *Journal of Applied Mechanics*, 57(1990), 398-403.
54. "Layering, Interface and Edge Effects in Muti-Layered Composite Plate", S. K.Datta, A. H. Shah and W. Karunasena, *Computers and Structures*, 37(1990), 151-162.
55. **"Wave Propagation in the Presence of Interface Layers in Composites", S. K.Datta, A. H. Shah, W. Karunasena, P. Olsson and A. Boström, *Materials Science and Engineering*, A126(1990), 141-147.
56. **"Elastodynamic Scattering from Inclusions Surrounded by Thin Interface Layers", P. Olsson, S. K. Datta and A. Boström, *Journal of Applied Mechanics*, 57(1990), 672-676.
57. "Experimental and Theoretical Study of Rayleigh-Lamb Waves in a Plate Containing a Surface_Breaking Crack", J. Paffenholz, J. W. Fox, T. Gu, G. S. Jewett, S. K. Datta and H. A. Spetzler, *Research in Nondestructive Evaluation*, 1(1990), 197-217.
58. "Guided Waves in a Bonded Plate: A Parametric Study", P. C. Xu and S. K. Datta, *Journal of Applied Physics*, 67(1990), 6779-6786.
59. "Scattering of Flexural Waves by Cavities in a Plate", R. Paskaramoorthy,H. Shah and S. K. Datta, *International Journal of Solids and Structures*, 25(1990), 117-1191.
60. "Ground Motion Amplification by Cylindrical Valleys Embedded in a Layered Medium", *Earthquake Engineering and Structural Dynamics*, 19(1990), 497-512.

Peer reviewed conference proceedings

1. "Thermoelastic Waves in an Anisotropic Infinite Plate," H.M. Al-Qahtani and S.K. Datta, Review of Progress in QNDE, eds. D.O. Thompson and D.E. Chimenti, Vol. 24A (2005), American Institute of Physics, NY, 257-264.
2. "Laser- Generated Thermoelastic Waves in an Anisotropic Infinite Plate," H.M. Al-Qahtani and S.K. Datta, Proc. 6th International Conf. Thermal Stress, Eds. F. Ziegler, R. Heuer, and C. Adam, Vienna, Austria, Vol. 1 (2005), 49-53 (The paper was presented at the special session dedicated to Ernst Melan and Heins Parkus.)
3. "Transient Ultrasonic Guided Waves in Bi-Layered Anisotropic Plates with Rectangular Cross Section," Review of Progress in QNDE, eds. D.O. Thompson and D.E. Chimenti, American Institute of Physics, NY, Vol. 23A (2004), 238-245.
4. "Guided Acoustic Phonon Modes in Layered Anisotropic Nanowires," O.M. Mukdadi, S.K. Datta and M.L. Dunn, Proc. Symposium on Testing and Evaluation of Meso/Micro/Nano-Scale Structures and Materials, ASME, NY, Nov. 16-23, 2003.
5. "Dispersion of Guided Elastic Waves in Noncircular Nanowires", O.M. Mukdadi, S.K. Datta, and M.L. Dunn, in Proc. 20th Symposium on Energy Engineering Sciences, B.F. Armaly and T.J. Fitzsimmons, eds., (2002), Argonne National Laboratory, Argonne, IL, 58-65.
6. "Scattering of Guided Waves by Circumferential Cracks in Steel Pipes", H. Bai, A.H. Shah, N. Popplewell, and S.K. Datta, in Rev. of Progress in QNDE, Vol. 20, eds. D.O. Thompson and D.E. Chimenti, (2001), American Institute of Physics, Melville, NY, 188-195.
7. "Ultrasonic Imaging and Prediction of Orthotropic Plate Stiffness in All Planar Directions", *ibid*, 279-286.
8. "Elastic Guided Waves in a Layered Plate with a Rectangular Cross Section", O.M. Mukdadi, S.K. Datta, and M.L. Dunn, in Proc. 7th ASME NDE Topical Conference, eds. C. Darvennes and T. Kundu, (2001), The American Society of Mechanical Engineers, NY, 167-173.
9. "On the Modeling of Guided Waves in Plates with Thin Superconducting Layers", A.J. Niklasson and S.K. Datta, in Rev. of Progress in QNDE, Vol. 19, eds. D.O. Thompson and D.E. Chimenti, (2000), American Institute of Physics, Melville, NY
10. "Ultrasonic Guided Waves in Thin Orthotropic Layers: Exact and Approximate Analyses", O.M. Mukdadi and S.K. Datta, in Nondestructive Evaluation and Characterization of Engineering Materials for Reliability and Durability Predictions, AMD-Vol. 240, eds. J. Qu and T. Kundu, (2000), The American Society of Mechanical Engineers, NY, 95-120.
11. "Dynamic Lock-in Holographic Imaging of Ultrasonic Waves", K.L. Telschow, V.A. Deason, and S.K. Datta, in Proc. 17th Symposium on Energy Engineering Sciences, B.F. Armaly, ed., (1999), Argonne National Laboratory, Argonne, IL, 74-81.
12. "Mechanical Behavior and Ultrasonic Characterization of Ductile/Brittle Layered Material Systems", *ibid*, 82-89.
13. "Impact Response of a Composite Plate with a Delamination", S.K. Datta, J. Zhu, and A.H. Shah, in Damage and Failure of Interfaces, H.P. Rossmanith, ed., (1997), A.A. Balkema, Rotterdam, 329-334.

14. "Wave Propagation in an Elastic Medium with a Random Distribution of Inclusions", S. K. Datta, S. Eriksson, and A. Bostrom, in Proc. 2nd Inter. Conf. Comp. Stochastic Mech., P. D. Spanos. ed., (1995), A. A. Balkena, Rotterdam, 521-526.
15. "Modal Response of a Composite Plate", J. Zhu, A. H. Shah, and S. K. Datta, in Impact, Waves, and Fracture, R. C. Batra, A. K. Mal, and G. P. MacSithig, eds., AMD-Vol. 205 (Symposium in honor of W. Goldsmith), (1995), ASME, New York, 443-451.
16. "A Hybrid Method for Guided Wave Scattering in a Composite Plate", A. H. Shah, J. Zhu, S. K. Datta, and D. E. Chimenti, in Numerical Methods in Structural Mechanics, J. W. Ju, ed., AMD-Vol. 204 (Symposium in honor of S. B. Dong), (1995), ASME, New York, 123-139.
17. "Considerations for Elastic Plate Wave Inspection in Bilayered Plates", P. J. Shull, D. E. Chimenti, S. K. Datta, and T. H. Ju, in Review of Progress in Quantitative Nondestructive Evaluation, D. O. Thompson and D. E. Chimenti, editors, 13(1994), Plenum Press, New York, 1407-1414.
18. "Ultrasonic Waves in Fiber Reinforced Composites with Thin Interphase Regions", *ibid*, 1445-1452.
19. "Modeling and Application of Guided Elastic Waves in Plates", J. Zhu, A. H. Shah, and S. K. Datta, in Wave Propagation and Emerging Technologies, V. K. Kinra, R. J. Clifton, and G. C. Johnson, editors, AMD Vol.-188, (1994), ASME, New York, 69-84.
20. "Analysis of Detection of Delaminations in Fiber Reinforced Composite Tubes Using Axially Symmetric Guided Waves", T. W. Kohl, W. P. Rogers and S. K. Datta, in Review of Progress in Quantitative Nondestructive Evaluation, D. O. Thompson and D. E. Chimenti, editors, 12(1993), Plenum Press, New York, 1353_1360.
21. "Three Dimensional Response of a Cross Ply Composite Plate with Imperfect Interfaces", R. Paskaramoorthy and S. K. Datta, *ibid*, 1429_1436.
22. "Dynamic Response of a Laminated Composite Plate with Interface Layers", T. H. Ju, S. K. Datta and A. H. Shah, in Ultrasonic Characterization and Mechanics of Interfaces, S. I. Rokhlin, S. K. Datta and Y. D. S. Rajapakse, editors, AMD_Vol. 177(1993), The American Society of Mechanical Engineers, New York, 135_145.
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"Dispersion of Guided Elastic Waves in Noncircular Nanowires", 20th Symposium on Energy Engineering Sciences, May 20-21, 2002, Argonne National Laboratory, Argonne, IL.

"Nonlinear Flexural Waves in Thin Layers", Symposium in honor of Art Leissa, 14th US National Congress of Theoretical and Applied Mechanics, June 23-28, 2002, VPI, Blacksburg, VA.

"Elastic Guided Waves in Layered Rectangular Waveguide: Effect of the Aspect Ratio", invited paper presented at the Symposium on Advances in Computational Modeling and Characterization of Advanced Composites, 6th US National Congress on Computational Mechanics, August 1-4, 2001, Dearborn, MI.

"On the Transient Response of a Plate with Thin Anisotropic Layers due to a Line Source", invited paper presented at the William Prager Medallist Symposium on Wave Motion and Dynamic Response (in honor of J.D. Achenbach), Mechanics and Materials Summer Conference, June 27-29, 2001, San Diego, CA.

"Ultrasonic Imaging and Prediction of Orthotropic Plate Stiffness in All Planar Directions", Review of Progress in QNDE, July 16 – 20, 2000, Iowa State University, Ames, IA.

"Scattering of Guided Waves by Circumferential Cracks in Steel Pipes", Review of Progress in QNDE, July 16-20, 2000, Iowa State University, Ames, IA.

"Plane Strain Wave Scattering by a Vertical Crack in a Coated Steel Plate", Keynote Lecture, 6th Annual International Conference on Composite Engineering, June 27 - July 3, 1999, Orlando, FL.

"Plane Strain Wave Scattering by a Vertical Crack in a Coated Steel Plate", Keynote Lecture, International Conf. Integrity, Reliability, and Failure, July 19-22, Porto, Portugal.

"Ultrasonic Characterization of Interface Layers in a Fiber-reinforced Composite", Invited Lecture, Symposium on Mechanics and Mechanisms of Failure of Interfaces in Engineering Materials, 1999 ASME Mechanics and Materials Conference, June 27-30, 1999, VPI, Blacksburg, VA.

"On the Modeling of Guided Waves in Plates with Superconducting Layers", Review of Progress in QNDE, July 25-30, 1999, Montreal, Quebec.

"Transient Response of a Composite Plate with Delamination", 13th U.S. National Congress of Applied Mechanics, Invited Paper, Symposium entitled Micromechanics and Damage Characterization of Advanced Materials, June 21-26, 1998, University of Florida, Gainesville.

"Ultrasonic Waves and Materials and Defect Characterization in Composite Plates", Invited Paper, NATO Advanced Study Institute on Mechanics of Composite Materials and Structures, July 12 - 24, 1998, Troia, Portugal.

"Transient Response of a Composite Plate with Delamination", Distinguished Lecture, 4th Int. Conf. Comp. Eng., July 6-12, 1997, Hawaii.

"Elastic Waves for the Characterization of Materials", Invited Lecture, Symposium entitled Elastic Waves for the Characterization of Materials", ASME/ASCE/SES Summer Meeting, June 27 - July 2, 1997, Northwestern University, Evanston.

"Impact Response of a Composite Plate with Delamination", 1st Int. Conf. on Damage and Failure of Interfaces, September 22 - 24, 1997, Technical University of Vienna, Vienna.

"Wave Propagation in an Elastic Medium with a Random Distribution of Inclusions", Second International Conference on Computational Stochastic Mechanics, June 13-15, 1994, Athens, Greece.

"Guided Ultrasonic Waves Along a Cylindrical Waveguide: Effect of Graded Interface", 12th US National Congress of Applied Mechanics, June 26-July 1, 1994, Seattle, WA.

"Wave Propagation Through a Solid Containing Distributed Cracks and Inclusions", Review of Progress in Quantitative Nondestructive Evaluation, July 31-August 5, 1994, Snowmass, CO.

"Modal Representation of Wave Propagation and Scattering in an Anisotropic Plate", *ibid.*

"Modal Representation and Transient Dynamics of Composite Plates", International Conference on Composites Engineering I, August 28-August 31, 1994, New Orleans, LA.

"Fiber-Matrix Interface and Guided Waves in a Composite Cylinder", *ibid.*

"Modeling and Experiments of Effective Properties of Particle Reinforced Composites", Prager Medal Symposium, 31st Annual Technical Meeting of the Society of Engineering Science, October 10-12, 1994, Texas A & M, College Station, TX.

"Scattering of Ultrasonic Waves by a Crack in a Plate", 1st SES_ASME_ASCE Joint Meeting, June 6_9, 1993, Charlottesville, VA.

"Surface Wave Scattering by a Material Joint Interface between Two Plates", invited, Mikowitz Memorial Symposium, 1st SES_ASME_ASCE Joint Meeting, June 6_9, 1993, Charlottesville, VA.

"Considerations for Elastic Plate Wave Inspection of Periodically Layered Plates", Review of Progress in Quantitative NDE, August 1_6, 1993, Brunswick, ME.

"Ultrasonic Scattering by Thin Interphase Regions in Particle and Fiber Reinforced Composites", invited, Review of Progress in Quantitative NDE, August 1_6, 1993, Brunswick, ME.

"Dynamic Response of a Laminated Composite Plate with Interface Layers", Symposium on Ultrasonic Characterization and Mechanics of Interfaces, ASME Winter Annual Meeting, November 28_December 3, 1993, New Orleans, LA.

"Effect of Membrane Stress and Material Properties at the Interface Layer on the Dynamic Response of a Laminated Composite Plate", ONR Workshop on Adaptive Structures with Active Materials, May 18_19, 1992, Tyson's Corner, VA.

"Inversion of Source, Material and Defect Characteristics Using Guided Waves", invited, IUTAM Symposium on Inverse Problems in Engineering Mechanics, May 11_15, 1992, Tokyo, Japan.

"Three Dimensional Dynamic Response of a Cross_Ply Composite Plate with Imperfect Interfaces", Review of Progress in Quantitative NDE, July 19_24, 1992, La Jolla, CA.

"Inversion of Material and Defect Characteristics Using Guided Waves", invited, 7th Technical Conference on Composite Materials, October 13_15, 1992, University Park, PA.

"Three Dimensional Dynamic Response of Composite Plates", invited, Symposium on Composite Materials, International Conference on Computational Engineering Science, December 17_22, 1992, Hong Kong.

"Interphase Effects on Ultrasonic Guided Waves and Scattering", invited, ONR/NRL Program Review of Science of Composite Interfaces, April 9_12, 1991, Wrightsville, NC.

"Transient Response of a Laminated Plate: Results from Homogenization and Discretization", invited, International Symposium on Micromechanics: Homogenization, Heterogenization and Strength, March 27_29, 1991, La Jolla, CA.

"Three Dimensional Amplification of Seismic Waves by Alluvial Valleys", invited, 1st U. S. National Congress on Computational Mechanics, July 21_24, 1991, Chicago, IL.

"Transient Scattering Of Rayleigh_Lamb Waves by Surface_Breaking and Buried Cracks in a Plate", Review of Progress in Quantitative NDE, July 28_August 2, 1991, Brunswick, ME.

"Pulse Propagation in a Laminated Composite Plate and Nondestructive Evaluation", Symposium on Enhancing Analysis Techniques for Composite Materials, ASME Winter Annual Meeting, December 1_6, 1991, Atlanta, GA.

"Guided Waves in Laminated Composite Plates and Shells", invited, Workshop on Recent Advances in Mathematical Theory of Anisotropic Elasticity and Application, June 4_6, 1990, U.S. Army Research Office, Research Triangle Park, NC.

"Scattering of Impact Wave by a Crack in Composite Plate", invited, Symposium on Impact Response and Elastodynamics of Composites, ASME Winter Annual Meeting, November 25_30, 1990, Dalls, TX.

"Elastic Constants of SiCw/Al₂O₃ Composites: Measurements and Modeling", 4th International Symposium on Nondestructive Characterization of Materials, June 11_14, 1990, Annapolis, MD.

"Elastic Constants of Al₂O₃ (Fiber)/Peek Composite: Measurements, Modeling and Low Temperatures", *ibid.*

"Lamb Wave Scattering by a Surface_Breaking Crack in a Plate", Review of

Progress in Quantitative NDE, July 15_20, 1990, La Jolla, Ca.

"Scattering of Impact Wave by a Crack in Composite Plate", *ibid.*

"Ultrasonic Characterization of Multilayered Thick Composite Plate", *ibid.*

"Lamb Wave Scattering by a Surface_Breaking Crack in a Plate", Symposium on Nondestructive Evaluation of Civil Structures and Matetials, October 15_17, 1990, University of Colorado, Boulder.

"Rayleigh and Love Waves in Cladded Anisotropic Medium", ASME Winter Annual Meeting, Novemebr 25_30, 1990, Dallas, TX.

"Elastodynamic Scattering from Inclusions Surrounded by Thin Interface Layers", *ibid.*

BOOKS and SPECIAL JOURNAL ISSUES EDITED(1990_1995)

Special issue of Wave Motion, Vol. 21, No. 1, G.C. Johnson, A.K. Mal, and S.K. Datta, Co-Editors, 1995.

Special issue of Composites Eng., Vol. 5, No. 12, N. Rajapakse and S. K. Datta, Co-Editors, 1995.

Ultrasonic Characterization and Mechanics of Interfaces, S. I. Rokhlin, S. K. Datta and Y. D. S. Rajapakse, editors, AMD_Vol. 177, The American Society of Mechanical Engineers, New York, 1993.

Proceedings of the Eleventh Symposium on Energy Engineering Sciences(Solid Mechanics and Processing_Analysis, Measurement and Characterization), Argonne National Laboratory, Argonne, IL, 1993.

Elastic Waves and Ultrasonic Nondestructive Evaluation, Proceedings of the IUTAM Symposium, July 30 – August 3, 1989, S. K. Datta, J. D. Achenbach and Y. S. Rajapakse, editors, North_Holland, Amsterdam, 1990.

SEMINAR AND COLLOQUIUM LECTURES(1990_)

“Ultrasonic Waves in Layered Anisotropic Plates”, Seminar in Mechanics, October 22, 2001, ETH-Zürich.

“Ultrasonic Guided Waves in Thin Anisotropic Layers: Exact and Approximate Analysis”, Department of Mechanics, Chalmers University of Technology, Gothenburg, Sweden, May 25, 2000.

"Ultrasonic Wave Characteristics in Coatings", Department of Civil Engineering, University of Queensland, Brisbane, Qld., October 27, 1999.

"Ultrasonic Wave Characteristics in Coatings and Interfaces", Applied Mechanics Seminar, College of Engineering, James Cook University, Townsville, Qld., November 10, 1999.

"Guided Elastic Waves in Laminated Plates and Shells (Dynamic Response and Material Characterization)", Institute Seminar, Georgia Institute of Technology, Atlanta, March 24, 1994.

"Guided Elastic Waves in Laminated Plates and Shells (Dynamic Response and Material Characterization)", Department of Mechanical Engineering and Materials Science, Rice University, Houston, March 25, 1994.

"Guided Elastic Waves in Laminated Plates and Shells (Dynamic Response and Material Characterization)", Department of Civil Engineering, Mechanics, and Metallurgy, University of Illinois Chicago, April 26, 1994.

"Guided Elastic Waves in Laminated Plates and Shells (Dynamic Response and Material Characterization)", Department of Mechanical and Aerospace Engineering, Rutgers University, New Brunswick, May 13, 1994.

"Guided Elastic Waves in Laminated Plates and Shells (Dynamic Response and Material Characterization)", Center for Nondestructive Evaluation, The Johns Hopkins University, Baltimore, July 22, 1994.

"Office of Basic Energy Sciences Engineering Research Program", Department of Mechanical Engineering, University of Pennsylvania, Philadelphia, June 1, 1993.

"Ultrasonic Techniques for the Determination of Anisotropic Elastic Properties of Composite Materials", University of Colorado, Boulder, November 2, 1992.

"Dynamics of Composite Laminates", Tohoku University, Sendai, Japan, May 8, 1992.

"Dynamics of Composite Laminates", Tokai University, Shizuoka, Japan, May 6, 1992.

"Inversion of Material and Defect Characteristics in Laminated Composite Plates Using Guided Waves", Department of Welding Engineering, Ohio State University, Columbus, August 20, 1992.

"Dynamics of Composite Laminates", Brown University, Providence, March 6, 1992.

"Guided Waves in Composite Plates: Material and Defect Characterization", Department of Mechanical Engineering, University of Colorado, Boulder, December 17, 1991.

"Guided Waves in Composite Plates: Material and Defect Characterization", MANE Department, University of California, Los Angeles, November 21, 1991.

"Use of Guided Elastic Waves for Material and Defect Characterization in Composites", David Taylor Research Center, Annapolis, October 24, 1991.

"Guided Wave Scattering in a Laminated Composite Plate", Materials Science Seminar, The Johns Hopkins University, Baltimore, October 23, 1991.

"Ultrasonic NDE of Composites", Department of Mechanical Engineering, University of Colorado, Boulder, November 14, 1990.

"Guided Waves in Laminated Plates and Shells", Department of Mechanical Engineering, University of Connecticut, Storrs, May 21, 1990.

"Computational Method in Dynamic Interaction Problems", MACS Seminar, University of Lesotho, January 12, 1990.

UNIVERSITY SERVICE AND OTHER(1990_)

Theses guided:

Dr. H. M. Al-Qahtani, Thermoelastic Waves in Anisotropic Plates, Fall 2004.

Dr. O. Mukdadi, Linear and Nonlinear Guided Waves in Plates, Fall 2002.

Dr. T. H. Ju, Transient Pulse Propagation and Dynamic Analysis of Fracture in Composite Laminated Plates, Fall 1991.

Dr. S. W. Liu, Transient Wave Scattering by Inhomogeneities and Cracks in Elastic Media, Spring 1991.

Dr. R. L. Bratton, Propagation and Scattering of Elastic Waves in Transversely Isotropic Plates, Summer 1990.

Dr. M. Bouden, Wave Propagation and Scattering in Layered Media: Application to Ultrasonic Evaluation of Interfacial Crack and Earthquake Ground Motion, Summer 1990.

Dr. Y. Al_Nassar, Scattering of Lamb Waves in an Elastic Plate for Ultrasonic Nondestructive Evaluation of Weldments and Cracks, Spring 1990.

Significant service and administrative activities:

Chair, Department of Mechanical Engineering, University of Colorado, Boulder, August 1995 - July 2004. I take great pride in the accomplishments of the ME Department during my tenure as Chair. The department made major advances in research, education and relations with alumni and industry. I include below some excerpts from the FRPA Report of 2003.

Member, ME Department Industrial Relations Committee. I was instrumental in forming this Committee soon after I became Chair in 1995. This has been very successful in building relations with local (and some national) industry in order to get support for student projects, internships, and gifts in kind. The Industry/University Projects Center was formed in 2000 under the Directorship of Jack Zable, who was recruited by me from IBM in 1997. This is a unique Center in the College in that it solicits and receives senior design projects that are supported by the industry. It has also been able to raise through sponsorship fees some funds to buy equipments for the Durning Laboratory.

Member, Faculty Search Committee, ME Department. Actively participated in the recruitment, interview, and negotiation for hiring of several faculty (Rishi Raj, Shelly Miller, Ken Gall, Victor Bright, Oleg Vasilyev, Robin Shandas, Conrad Stoldt, Jerry Qi) who have enriched the Department and brought recognition to it.

Member, ME Department Undergraduate Committee. I encouraged the Chair of the committee, Jean Hertzberg, to have in-depth discussions on the strategies that must be adopted by the department to address the challenge associated with largest undergraduate enrollment in ME. These were discussed at the fall 2003 Industrial Advisory Board meeting to obtain feedback from the industry. One of the strategies that the faculty have approved is to limit the enrollment starting fall 2004.

Chair, ME Department Personnel Committee. Guided the evaluation of the faculty activities. Personnel Committee was actively engaged in making recommendations to the Department regarding new faculty hires, reappointment and promotion decisions. Made successful recommendations for promotion to Associate Professor and Tenure and Professor for several faculty (Jean Hertzberg, Jana Milford, Marty Dunn, Victor Bright, Ken Gall, Alan Greenberg, Ganesh Subbarayan.)

Chair, ME Department Executive Committee. The members played an active role in the smooth operation of the Department, personnel management, and budget.

Chair, Department of Mechanical Engineering. I am very pleased that during nine years that I was Chair the Department made significant progress toward excellence. The Department was enriched by the new faculty who joined. I worked closely with the Dean to obtain funding from the Provost and the College to remodel and acquire new laboratories, all of which (the cleanroom, the nanostructure laboratory, and the bioengineering laboratory) were completed in fall 2003. The last PRP review clearly demonstrated that the Department had made gains in every area except the number of graduate students (this improved considerably since fall 2002). The Department now has established strong collaboration with industry; the Durning Laboratory for undergraduate design and experiment has been expanding; the Department is the leader in the university wide initiative in micro/nano systems for engineering and life sciences; the program in biomedical engineering is expanding and will eventually become nationally recognized; there is now a strong environmental engineering effort and it is gaining momentum as Jana and Shelly have returned to teaching and research in fall 2003. Research Associate Mike Hannigan is also playing a key role in advancing environmental research.

Member, ME Centennial Committee. The Department concluded the celebration of its 100th anniversary in spring 2003 by a full day of activities on May 8, 2003. The activities included the installation of five panels on the north wall of the 1st floor hallway in the ME area. They depict the capsule history (that I spent a considerable amount of time in writing). Among other activities was a morning panel discussion on education and research. Most of the panelists were alumni who have distinguished themselves in industry, academia and government. There was a good representation from alumni, students and faculty at this event and at the luncheon. There was also a poster session in the afternoon. Both graduate and undergraduate students displayed their research and project work at the session. The banquet in the evening was attended by many alumni (for the first time) as well as spring ME graduates and their parents. This was clearly a highly successful event. We have now put in place an Alumni Relations Committee that I hope will be as successful as the Industrial Relations Committee (that I was instrumental in forming soon after I became Chair) in building a network of ME alumni for supporting the students, staff, and faculty.

Member, Strategic Futures Council, College of Engineering and Applied Science, 1999 - 2000.

Member, Administrative Council, College of Engineering and Applied Science, University of Colorado, Boulder, August 1995 - July 2004.

Chair, Personnel Committee, Department of Mechanical Engineering, CU - Boulder, August 1995 - July 2004.

Chair, Board of Directors, B.K. Roy Group of Companies, Calcutta, India, 1996-2000.

Chair, Executive Committee, Department of Mechanical Engineering, CU - Boulder, August 1995 - July 2004.

Chair, Strategic Planning Committee, Department of Mechanical Engineering, CU - Boulder, August 1995 - 1998.

IPA Engineer, Division of Engineering and Geosciences, DOE, January 1993_August, 1994.

(Duties were to assist the research program manager, Dr. Oscar Manley, at DOE/BES. These involved getting the unsolicited proposals reviewed by external peer reviewers, evaluation of the proposals and reviews, evaluation and recommendation for new and continued funding as well as declination of

funding, visits to universities and laboratories having BES/ERP funded projects or with potential for funded projects, participation at project review meetings, visits with project managers at NSF, ONR, AFOSR, ARO, NIST, and others. Activities also included program planning and preparing budget summary descriptions. Extensive interaction with the current and potential investigators were essential. I also participated as the Secretary to the Council on Energy Engineering Research (an advisory committee to the Engineering Research Program)).

Head, Department of Mechanical Engineering, University of Connecticut, September 1991_August,1992.

(A significant part of my duties as the administrative officer of the Department of Mechanical Engineering was to formulate a Strategic Plan for the Department that was incorporated into the Strategic Plan of the College of Engineering. This required having all the faculty involved in charting out a future direction and course of action to significantly increase funded research activities and cooperative efforts involving local industries. With the help and participation of the Dean I got commitments from the United Technologies (Pratt and Whitney Division) to support the development of a manufacturing program. During my tenure I was successful in hiring a new faculty member in this important area.)

Other committee activities include:

Member and Past Chair, ASME Applied Mechanics Division Wave Propagation Committee (renamed Dynamic Properties of Materials Committee).

Member, Fellows Committee, American Academy of Mechanics.

Mechanical Engineering Department Heads Committee (1991_1992, 1995 - 2004.)

Secretary, Council on Energy Engineering Research, DOE, 1993_1994.

Member, Energy Materials Coordinating Committee, DOE, 1993_1994.

Member, Scientific Committee, 2nd International Symposium on Inverse Problems in Engineering Sciences, Paris, France, November 2_4, 1994.

Member, Scientific Committee, International Conference on Computational Stochastic Mechanics, Athens, Greece, June 13_16, 1994.

Member, Organizing Committee, Workshop on Marine Infrastructure Aging, April 7_8, 1994.