



Associate Professor of Mathematical Sciences - 08/1985 -08/1990  
The University of Akron

Assistant Professor 08/1983 - 08/1985  
University of Tennessee Space Institute  
Tullahoma, Tennessee .

Staff Scientist

## Journal Publications

1. **S. I. Hariharan**, "On the Normal Stress Effects of Incompressible Non-Newtonian Fluids," *Journal of Applied Physics*, Vol. 312, No. 2, 1981, pp. 109 -119.
2. **S. I. Hariharan** and R. C. MacCamy, "Integral Equation Procedures for Eddy Current Problems," *Journal of Applied Physics*, Vol. 45, No. 1, 1982, pp. 80 -99.
3. **S. I. Hariharan**, "Inverse Scattering for a Two-Dimensional Exterior Dirichlet Problem," *Journal of Applied Physics*, Oct. 1982, pp. 273 -286.
4. **S. I. Hariharan** and E. Stephan, "A Boundary Element Method for a Two-Dimensional Interface Problem in Electromagnetics," *Journal of Applied Physics*, Vol. 42, 1983, pp. 311 -322.
5. **S. I. Hariharan** and H. C. Lester, "A Finite Difference Solution for the Propagation of Sound in Near Sonic Flows," *Journal of Applied Physics*, Vol. 75, 1984, pp. 1052 -1062.
6. **M. H. Dunn** and **S. I. Hariharan**, "Numerical Solutions of One Dimensional Inverse Scattering Problems," *Journal of Applied Physics*, Vol. 55, No. 1, 1984, pp. 157-165.
7. **S. I. Hariharan** and H. C. Lester, "Acoustic Shocks in a Variable Area Duct Containing Near Sonic Flows," *Journal of Applied Physics*, Vol. 58, No. 1, 1985, pp. 134 -145.
8. **S. I. Hariharan** and A. Bayliss, "Computation of Radiation of Sound from Unflanged Cylindrical Ducts," *Journal of Applied Physics*, Vol. 6, No. 2, 1985, pp. 285 -296.
9. **C. Canuto**, **S. I. Hariharan**, and L. Lustman, "Fz" 1 f Ma Mimeo in

13. T. Hagstrom and S. I. Hariharan , " Accura te Boundary Conditions for Exterior Problems in Gas Dynamics", *Journal of Computational Physics*, Vol. 51, No. 184, (1988), pp. 581 -597.

14. S. I. Hariharan and P. K. Dutt, " Acoustic G ravity Waves: A Computational Approach," *Journal of Computational Physics*, Vol. 4, 1988, pp. 491 -506.

15. S. I. Hariharan and Yu Pind *Journal of Computational Physics*, Vol. 4, 1988, pp. 491 -506. o o vit

25. **S. I. Hariharan**, K. Kreider and J. R. Scott, "A Potential Theoretic Method for Far Field Sound Calculations," *Journal of Acoustical Society of America*, **164**, pp. 143 -164 (2000).
26. **C. B. Clemons**, **S. I. Hariharan** and D. D. Quinn, "Amplitude Equations for Time-dependent Solutions of the McKendrick Equations," *Journal of Applied Physics*, **Vol. 62, No. 2**, pp. 684 -705 (2001).
27. **D. Golovaty**, **L. K. Gross**, **S. I. Hariharan** and E. C. Gartland, "On the stability of Uniform bend Freedericksz configuration in nematic liquid crystals," *Journal of Applied Physics*, **255**, (2001), pp. 391 -403.
28. **S. I. Hariharan** and G. W. Young, "Comparison of Asymptotic Solutions of a Phase-field Model to a Sharp  $\delta$ -interface Model," *Journal of Applied Physics*, **Vol. 62, No. 1**, (2001), pp. 244 -263.
29. **H. R. Patel**, **S. I. Hariharan** and **G. G. Chase**, "Evaluation of Steady Flow Through a Six-Lobe Sand Cartridge Filter by the Method of Boundary Perturbation Method," *Journal of Applied Physics*, **5(1)**, 49-56 (2002).
30. **C. B. Clemons**, **S. I. Hariharan**, and G. W. Young, "Asymptotic Solutions of a Phase-Field Model for Alloy Solidification," *Journal of Applied Physics*, **Vol. 62, No. 6**, (2002), pp. 1952 -1979.
31. **R. Evans**, **A. Salifu**, **G. Zhang**, **E. Evans**, **S. I. Hariharan** and **G. W. Young**, "Development of Experimental Techniques and an Analytical Model for Aluminum Nitriding," *Journal of Applied Physics*, **Vol. 157**, (2002), pp. 59 -65.
32. **S. I. Hariharan**, **S. Sawyer**, and **D. D. Quinn**, "A Laplace Transform/Potential Theoretic  $\delta$ -Method for Acoustic Wave Propagation in Subsonic Flows," *Journal of Applied Physics*, **185**, (2003), 252- 270.
33. **T. Hagstrom**, **S. I. Hariharan**, and **D. Thompson**, "High-Order Radiation Boundary Conditions for the Convective Wave Equation in Exterior Domains," *Journal of Applied Physics*, **Vol. 25, No. 3**, (2003), pp. 1088 -1101.
34. **W. Hannon**, **M. J. Braun**, and **S. I. Hariharan**, "Generalized Universal Reynolds Equation for Variable Properties Fluid  $\delta$ -Film Lubrication and Variable Geometry Self-Acting Bearings", *Journal of Applied Physics*, **47**: 171-181, 2004.
35. **S. I. Hariharan** and **S. Sawyer**, "A Transform/Potential Theoretic Methods for Acoustic Radiation from Structures", *Journal of Applied Physics*, **Vol. 18**, **No. 1**, pp. 60 - 67, (2005).
36. **G. Vasudevan**, **S. I. Hariharan**, and **G. G. Chase**, "Modeling the Loading Stage Coalescence Process in Fibrous Media", *Journal of Applied Physics*, **8(3)**, 299-310 (2005).



48. H. V. Vu, Nghi H. Tran, M. C. GURSOY, T. Le -Ngoc, and S. I. Hariharan, "Capacity-Achieving Input Distributions of Additive Quadrature Gaussian -Mixture Noise Channels", (accepted) (2015).
49. Ashenafi Hegana, S. I. Hariharan, Erik Engeberg, "Electromechanical Conversion of Low Temperature Waste Heat via Helical Shape Memory Alloy Actuators", IEEE Transactions on Mechatronics (accepted) (2015).

#### Refereed Conference Proceedings and Book Chapters

1. S. I. Hariharan and R. C. MacCamy, "Numerical Solutions of Low Frequency Electromagnetic and Acoustic Scattering," Numerical Solutions of Singular Integral Equations, Eds. A. Gerasoulis and R. Vichnevetsky, IMACS, 1984.
2. S. I. Hariharan, "Numerical Solutions of Acoustic Wave Propagation Problems Using Euler Computations," paper No. 84 -2290 (1984).
3. S. I. Hariharan, "Absorbing Boundary Conditions for Elliptic and Hyperbolic Problems," Chapter 6, Numerical Methods for Partial Differential Equations, Pitman/Longmans, 1986.
4. S. I. Hariharan, "A Model Problem for Acoustic Wave Propagation in the Atmosphere", Proceedings of the First IMACS Symposium on Computational Acoustics, North Holland, Eds. D. Lee, R. L. Sternberg and M. Schultz (1988) pp. 65 - 82.
5. J. S. Wang, N. Ida and S. I. Hariharan, "Numerical Modeling of Transient Wave Propagation for High Frequency NDT," Review of Progress in Quantitative Non-destructive Evaluation, D. O. Thompson and D. E. Chimenti, Eds., Plenum Press, (1989), Vol. 8A, pp. 259 -266.
6. N. Ida, S. I. Hariharan, J. S. Wang and M. E. Lee, "Computation of High Frequency Electromagnetic Fields," in Electromagnetic Fields in Electrical Engineering, D. Shunnian, Ed., International Academic Publishers, Oxford, Proceedings of the Beijing International Symposium on Electromagnetic Fields in Electrical Engineering, Beijing, China, October 19 -21, (1989), pp. 600 -603.
7. S. I. Hariharan and T. Hagstrom, "Far Field Expansion for Anisotropic Wave Equations," Proceedings of the Second IMACS Symposium on Computational Acoustics, North Holland, Eds. D. Lee, A. Cakmak and R. Vichnevetsky, (1990), pp. 283 -294.

9. J. N. Scott, R. R. Mankbadi, S. I. Hariharanadi,



19. Erik D. Engeberg, S. I. Hariharan , and Benjamin A. Kent, " Electromechanical Conversion of Low -grade Heat into Electricity with Shape Memory Alloy Actuators, , IEEE 2013, pp. 1-6.

7. " A Cooperative Agreement of the Support of MMSL Software and Hardware," 1987-88, Grant No. NCC -3-104, NASA Lewis Research Center, (\$123,000), with G. W. Young.
8. " A Cooperative Agreement for the Support of MMSL Software and Hardware," 1988-89, Grant No. NCC -3-104, NASA Lewis Research Center, (\$140,000), with G. W. Young.
9. Academic Challenge Grant, 1989 -90, State of Ohio (with seven other faculty members) (\$53,000)
10. " A Cooperative Agreement for the Support of MMSL Software and Hardware," 1989-90, Grant No. NCC -3-104, NASA Lewis Research Center, (\$60,000 ), with G. W. Young.
11. " Computational Analysis for Time Dependent Wave Propagation Problems in Exterior Domains," Division of Mathematical Sciences, NSF Mathematical Sciences Division, Grant No. DMS -8921189, 1990-92 (\$43,000)
12. 1990-91, NASA Lewis Research Center, Grant No. NCC -3-104, (\$184,000), with G. W. Young.
13. Academic Challenge Grant (rounds 1,2,3 and 4), 1990 -93, OBR, State of Ohio (with seven other faculty members) (\$200,000)
14. " A Cooperative Agreement for the Support of MMSL Software and Hardware," 1991-92, Grant No. NCC -3-104, NASA Lewis Research Center , (\$257,000), with G. W. Young.
15. " Computational Analysis for Time Dependent Wave Propagation Problems in Exterior Domains," Division of Mathematical Sciences, NSF Mathematical Sciences Division, Grant No. DMS -8921189, 1992 - REU Supplement (\$2,500).
16. " A Cooperative Agreement for the Support of MMSL Software and Hardware," 1992-93, Grant No. NCC -3-104, NASA Lewis Research Center, (\$247,000), with G. W. Young.
17. " Shock Position Sensing: Theory, Experiment and Design", 1993-95, Grant No. NCC -3-283, NASA Lewis Research Center, (\$167,000).
18. " A Cooperative Agreement for the Support of MMSL Software and Hardware," 1993-94, Grant No. NCC -3-104, NASA Lewis Research Center, (\$187,000), with G. W. Young.
19. " Applied Mathematics: Research Challenge Faculty Research Award -Ohio Board of Regents", 1994 -95, (\$9,300).



33. " Multiscale Analysis and Simulation of Nanofiber Coatings: Growth and



## Other Publications

"An Integral Equation Procedure for Eddy Current Problems," Ph.D. thesis  
Carnegie -Mellon University, 1980.

"A Review of Numerical Solutions of Integral Equations of the Second Kind," M.Sc.  
thesis, University of Salford, 1978.

## Papers Presented at Conferences (Abstracts Published)

1. AMS 84th Summer Meeting, Ann Arbor, Michigan, August 18 -22, 1980, paper No. 779-45-1 (with R. C. MacCamy) - "An Integral Equation Procedure for Eddy Current Problems."
2. SIAM Fall Meeting, Cincinnati, Ohio, October 26 -28, 1982 - Inverse Scattering for an Exterior Dirichlet Problem."
3. ASA (Acoustical Society of America) 104th meeting, Orlando, Florida, Nov. 8 -12, 1982, paper No. VVII (with H. C. Lester) - "A Finite Difference Solution for the Propagation of Sound in a Variable Area Duct."
4. SIAM Fall Meeting, Norfolk, Virginia, November 7 -9, 1983 - "Acoustic Shocks in a Converging -diverging Nozzle," (with H. C. Lester).
5. AIAA/NASA 9th Aeroacoustics Conference, Williamsburg, Virginia, October 15 -17, 1984 - "Numerical Solution of Acoustic Wave Propagation Problems Using Euler Computations."
6. AIAA, Tennessee Section, 3rd Aerospace Sciences Technical Symposium,

9. Hyperbolic Problems - Second International Conference, RWTH, Achen, West Germany, March 14 -18, 1988, -

21. 15th AIAA Aeroacoustics Conference, October 25 -27, 1993, Long Beach, CA, "Outflow Boundary conditions for the Computational Analysis of Jet Noise," with J.



33. Ninth International Conference on Hyperbolic Problems: Theory, Numerics and Applications, March 22 -29, 2002, Caltech, "On Phase-field Methods".
34. Hariharan, S.I. ; Sawyer, S.; Quinn, D.D.:  
 , Proceedings of the  
 , July 7-12, 2002,  
 Vienna, Austria, Editors: Mang, H.A.; Rammerstorfer, F. G.; Eberhardsteiner, J.,  
 Publisher: Vienna University of Technology, Austria, ISBN 3 -9501554-0-6,  
<http://wccm.tuwien.ac.at>
35. S. Andan, S. I. Hariharan , G. G. Chase, "Effect of Saturation on Coalescence Filtration" American Filtration Society Conference, Ann Arbor, Oct 2005.
36. S. Andan; S. I. Hariharan , and G. G. Chase, "Modeling of Drainage" American Filtration Society Conference, Chicago, May 2006.
37. S. Andan, S. I. Hariharan , and G. G. Chase, "Loading Stage in Cylindrical Coordinates" American Filtration Society Conference, Pittsburgh, Oct 2006.
38. S. Andan, S. I. Hariharan , and G. G. Chase, "Modeling of Drainage in Coalescence Filtration" American Filtration Society Conference, Orlando, March 2007.
39. T. Marinov and S. I. Hariharan , " Old Boundary Integral Techniques and New Problems in Nanotechnology" , Boundary Elements - Theory and Applications Beta 2007, Hannover, Germany, May 22 - 24, 2007.

Short Course : Instructor (Organized with T. H. Moulden)

Numerical Methods for Partial Differential Equations, March 18 -25, 1985, University of Tennessee, Tullahoma, TN 37388.

Conference

Waves and Memory in Continua: A Meeting in Honor of Richard C. MacCamy, Carnegie -Mellon University, Pittsburgh, August 17 -19, 1995. Organized with W. Hrusa, G. Hsiao, V. Mizel and M. Gurtin.

Homogenization and Materials Science, The University of Akron, Akron, September 15 - 17, 2000. Organized with L. Berlyand and G. W. Young (funded by the National Science Foundation).

Memberships in Professional and Honorary Societies

The Institute of Electrical and Electronics Engineers (IEEE)

Society for Industrial and Applied Mathematics (SIAM)

## Theses and Dissertations Supervised

1. Roger Pelham - M.S. (1984) -

