# *Academic Profile* of Srinivasa Rao Manam

**Present address :**
Professor,
Department of Mathematics,
Indian Institute of Technology Madras,
Chennai, Tamil Nadu 600 036,
India.

**Contact:**
Tel.: +91-044-2257 4637 (office)
+ 91–044-2257 6637 (Home)
+91-9884442476 (Mobile)
E-mail: manam@iitm.ac.in;
srinimanam@gmail.com

---

**Areas of Interest***:* Nonlinear Wave Mechanics, Integral equation methods in water wave scattering, Wave structure interactions, General Applied Mathematics.

## Education:

**Postdoc fellowship at Technion, Haifa, Israel (2006).**

**AvH Research Fellow at Technical University of Braunschweig, Braunschweig, Germany(2005).**

**Post-doctoral Fellow at ENS de Cachan, Paris, France (2004).**

**Doctor of Philosophy (Applied Mathematics)**

**Title of the thesis: Singular Integral Equations in Water wave Scattering**
**Date of submission: October 2002 in the department of mathematics at Indian Institute of Science, Bangalore**

**Master of Science (Mathematics) 1997, 8.21 CGPA**
**Pondicherry University, Pondicherry, India.**

## Scholastic achievements

1. C. L. Chandana Award for students at Department of Mathematics, Indian Institute of Science, for the year 1998-1999.
2. National Board for Higher Mathematics (NBHM) research award in Mathematics (1998-2003).
3. National Board for Higher Mathematics (NBHM) Post-Doctoral Fellowship (2003).
4. Post-Doctoral Fellowship by Ministry of Research, France (2004).
5. Alexander von Humboldt Fellowship, Germany (2005).
6. Technion postdoc fellowship, Haifa, Israel (2006).
7. Assistant Professor, Dept. of Mathematics, IIT Madras (2007-2014).
8. Associate Professor, Dept. of Mathematics, IIT Madras (2014-2019).
9. Professor, Dept. of Mathematics, IIT Madras (2019-Present).

## Ph.D Students guided: 4

## Ph.D Students guiding: 4

## Teaching at IIT Madras:

Calculus (MA1010, MA1020)
Differential Equations (MA2020)
Probability and Statistics (MA 2040, MA5540)
Ordinary Differential Equations (MA5390)
Partial Differential Equations (MA5920)
Mathematical methods for Industry (MA5800)
Dynamical Systems (MA6050)
Complex variables (MA2010, MA5360)
Transform Techniques (MA5460)
Applied Integral Equations (MA6006)

## NPTEL MOOC Courses:

**Differential Equations for Engineers**

This is a comprehensive course on the differential equations theory and methods of solutions. Starting from ordinary differential equations of first order of different types, the student learns about the solutions of linear equations of any order. Special equations like Legendre and Bessel equations are completely solved with properties of orthogonal set of solutions. First order partial differential equations are solved by Lagrange's method. Linear second order partial differential equations in two variables are classified and each of the typical equation is solved for its solution and uniqueness of solutions are discussed in each case.

**Transform Techniques for Engineers**

This a complete package of Four transforms Fourier transforms over a finite interval, Fourier transforms over unbounded intervals, Laplace transform and Z-transform. The derivation of these transforms and their inverse transform along with properties are given. Applications of each of these transforms are given by solving many differential equations and integral equations over suitable domains.

# Refereed International Journal Publications

1. A. Chakrabarti and **S. R. Manam,** Solution of a logarithmic singular integral equation, *Applied Mathematics Letters,* 16 (2003), 369-373.
2. A. Chakrabarti**, S. R. Manam** and S. Banarjea**,** Scattering of surface water waves involving a vertical barreir with a gap, *Journal of Engineering Mathematics,* 45 (2003), issue 2, 183-194.
3. A. Chakrabarti**,** D.S. Ahluwalia and **S. R. Manam,** Surface water waves involving a vertical barreir in the presence of an ice-cover, *International Journal of Engineering Science,* 41 (2003), issue 10, 1145-1162.
4. **S.R. Manam**, A logarithmic singular integral equation over multiple intervals, *Applied*

*Mathematics Letters*, 16 (2003), No. 7, 1031-1037.

5. **S.R. Manam,** A note on a singular integral equation arising in water wave scattering**,** *IMA Journal of Applied Mathematics*, 69 (2004), 483-491.
6. **S.R. Manam** and T. Sahoo, Waves past porous structures in a two-layer fluid, *Journal of Engineering Mathematics* 52 (2005), 355-377.
7. **S.R. Manam,** J. Bhattacharjee and T. Sahoo, Expansion formulae in wave structure interaction problems, *Proc. Roy. Soc. London A* (2006), 462, N0.2065, 263-287 .
8. P. Suresh Kumar, **S.R. Manam** and T.Sahoo, Wave scattering by Flexible porous Vertical Membrane Barrier in a two-layer Fluid, *Journal of Fluids and Structures*, 23 (2007), N0. 4, 633-647.
9. **S.R. Manam**, On the solution of dual integral equations, *Applied Mathematics Letters*, 20 (2007), No. 4, 931-935.
10. **S.R. Manam**, Scattering of membrane coupled gravity waves by partial vertical barriers, *ANZIAM Journal*, 51 (2009), 241-260.
11. **S.R. Manam**, Yaron Toledo and Yehuda Agnon**,** Complementary mild-slope equations in a two-layer fluid, *Wave Motion*, 48 (2011) 223-234.
12. **S.R. Manam,** Multiple integral equations arising in the theory of water waves, *Applied Mathematics Letters*, 24 (2011) 1369-1373.
13. **S.R. Manam** and R. B. Kaligatla**,** Effect of a submerged vertical barrier on flexural gravity waves, *International journal of engineering science*, 49 (2011) 755-767.
14. **S.R. Manam** and R. B. Kaligatla**,** A mild-slope model for membrane-coupled gravity waves, *Journal of Fluids and Structures*, 30 (2012) 173-187.
15. **S.R. Manam,** A dual integral equation method for capillary-gravity wave scattering, *Journal of Integral Equations and Applications*, 24 (2012), No. 1, 81-110.
16. **S.R. Manam** and R. B. Kaligatla**,** Structure-coupled gravity waves past a vertical porous barrier, Proceedings of the Institution of Mechanical Engineers, Part M, *Journal of Engineering for the Marine Environment*, 227 (2013), No. 3, 266-283.
17. **S.R. Manam** and R. B. Kaligatla**,** Membrane coupled gravity wave scattering by a vertical barrier with a gap, *ANZIAM Journal*, 2014 (in press).
18. R.B. Kaligatla and **S.R. Manam,** Flexural gravity wave scattering by a nearly vertical porous wall, *Journal Engineering Mathematics*, 88 (2014), 49-66.
19. R.B. Kaligatla and **S.R. Manam,** Bragg resonance in membrane-coupled gravity waves, *International Journal of Advances in Engineering sciences and Applied Mathematics*, 8(3) (2016), 222-237.
20. **S.R. Manam** and M. Sivanesan**,** Scattering of water waves by vertical porous barriers: an analytical approach, *Wave Motion*, 67 (2016), 89-101.
21. **S.R. Manam** and M. Sivanesan**,** A note on the explicit solutions for wave scattering by vertical porous barriers, *Wave Motion*, 69 (2017), 81-90.
22. M. Sivanesan and **S.R. Manam,** Water wave scattering by a vertical porous barrier with two gaps, *ANZIAM Journal*, 61 (2019), 47-63.
23. R. Ashok, C. Gunasundari and **S.R. Manam,** Explicit solutions of the scattering problems involving vertical flexible porous structures, *Journal of Fluids and Structures*, 99 (2020).
24. R. Ashok and **S.R. Manam,** Oblique water wave scattering by vertical elastic porous barriers, *International Journal of Engineering Science*, 169 (2021), 103578.
25. R. Ashok and **S.R. Manam,** Oblique wave scattering problems involving vertical porous membranes, *Journal of Marine Science and Application* , 21(2022), 51-66.

**26.** C. Gunasundari, R. Ashok and **S.R. Manam,** Effect of a pressure ridge on ice-coupled gravity waves, *International Journal of Offshore and polar engineering*, 32(2022), No. 3, 313-320.

**27.** Mohammad Atif, S.T.G. Raghukanth and **S.R. Manam**, Reduced micropolar half-space subjected to earthquake sources, *Int. Jl. Of Earthquake and Impact Engineering* (2023) (10.1504/IJEIE.2022.10051178)

**28.** Mohammad Atif, S.T.G. Raghukanth and **S.R. Manam**, Finite-fault simulations for rotations and strains in the near-fault subjected to layered reduced micropolar half-space. *Journal of Seismology*, 4(2024), No. 2, 123-153. (https://doi.org/10.1007/s10950-023-10140-0)

**29.** R. Ashok, **S.R. Manam** and M. Sivanesan Effect of a submerged or a surface piercing porous barrier on structure-coupled gravity waves, *Mathematical Methods in the Applied Sciences*, (2023), 1-20. (DOI: 10.1002/mma.9481).

**30.** T. Mondal, R. Ashok, and **S.R. Manam**, An analytical study on generation of waves due to the rolling of flexible porous barriers. *Physics of Fluids* 36(2024), 057136. (doi: 10.1063/5.0208737).

**31.** Rajesh Ranjan Dora, **S.R. Manam**, and Sanjay Kumar Mohanty, Wave Resonances and the Time-Dependent Capillary Gravity Wave Motion. *Wave Motion*, (2024).

**32.** Mohammad Atif, S.T.G. Raghukanth and **S.R. Manam**, A mathematical model for a buried source in the layered reduced micropolar half-space. *Pure and Applied Geophysics* (2024) (https://doi.org/10.1007/s00024-024-03571-4).

**33.** Mario A. John, Alam Parvez, Lee Jaesun and **S.R. Manam**, Green's function approach to determine the impact of disturbance source on SH-wave regulation in the piezoelectric layer over FGTI substrate, *Engineering Computations* (2025).

**34.** T. Mondal and **S.R. Manam**, An analytical study on oblique wave scattering involving flexible porous structures in a two-layer fluid. *Journal of Fluid Mechanics* (2025). (Accepted).

## Refereed National Journal Publications

1. A. Chakrabarti**,** D.S. Ahluwalia and **S. R. Manam,** A note on surface water waves for finite depth in the presence of an ice-cover, *Indian Journal of Pure and Applied Mathematics*, 34(11) (2003), 1631-1644.

## Conference and workshop Publications

A. Chakrabarti**,** D.S. Ahluwalia and **S. R. Manam,** Role of weakly singular integral equations in water wave scattering, presented at J.B. Keller workshop on applied mathematics- future directions, January 4-5, 2003, Stanford University. CA, U.S.A.

P. Suresh Kumar, **S.R. Manam**, Y.M. Oh, Studies on wave-structure interaction in a two- layer fluid, June 2007, Conference on ocean wave research and development, KORDI, Seol, Korea.

**S.R. Manam** and R. B. Kaligatla, Effect of surface piercing barriers on membrane- coupled gravity waves. *Advances in PDE modeling and computation*, Ane Books Pvt. Ltd. (2013), 281-298.