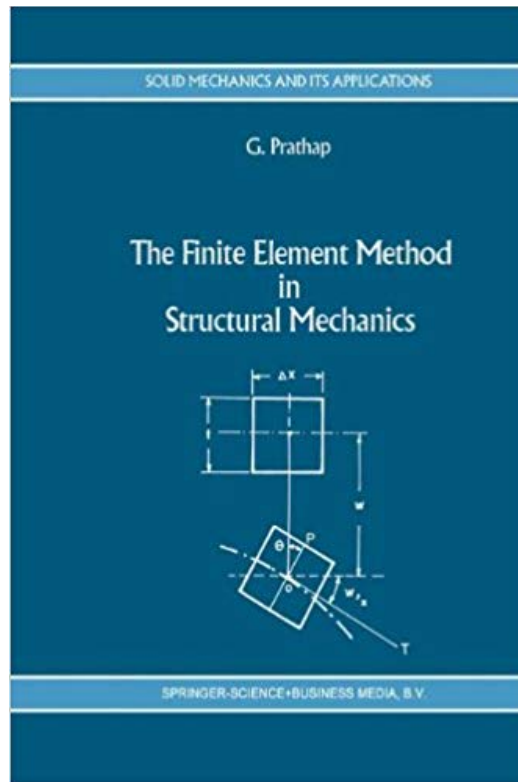




**Professor Gangan Prathap**



See:

[https://en.wikipedia.org/wiki/Gangan\\_Prathap](https://en.wikipedia.org/wiki/Gangan_Prathap)

<https://scholar.google.com/citations?user=Xx42dz8AAAAJ&hl=en>

[https://www.researchgate.net/profile/Gangan\\_Prathap2](https://www.researchgate.net/profile/Gangan_Prathap2)

National Institute for Interdisciplinary Science and Technology (NIIST)  
CSIR-NIIST, Thiruvananthapuram, India

**Education:**

B.Tech.(Aero. Engg.) IIT Madras 1974 First class with distinction and first rank

Ph.D. (Aero. Engg.) IIT Madras 1978

**Academic Prizes, Honours and Awards:**

- First rank in School - Raffles Institution, Singapore 1968
- First rank in Pre-University - Madras Christian College, Madras 1969
- National Prize for 1st rank in India, Joint Ent. Exam to IIT's 1969
- President of India Prize for 1st rank in B.Tech Degree Course IIT Madras 1969-1974
- DAAD Exchange Fellow, Braunschweig, W. Germany, 1983-84
- Associateship of Indian Academy of Science in 1985
- NAL Foundation Day Award for Outstanding Contributions to Basic Research 1988
- S S Bhatnagar Prize in Science and Technology for 1990

- Honorary Senior Fellow, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore
- Distinguished Alumnus Award of Aero. Soc of India 1996, for best Aero. Engg. alumnus of IIT Madras
- Distinguished Alumnus Award 1999 of IIT Madras
- Chairman, Board of Governors, NIT, Arunachal Pradesh

**Positions Held:**

1. Institute Fellowship for Doctoral research, IIT Madras, Aug. 1974 - Feb. 1977
2. Research Assistant, Fibre Reinforced Plastics Research Centre, IIT Madras, Mar. 1977 - Aug. 1978
3. Research Associate, National Aeronautical Laboratory, Bangalore, Sep. 1978 - Aug. 1980
4. Scientist, National Aerospace Laboratories, Bangalore, Aug. 1980 – Apr. 2000
5. Scientist-in-Charge, CSIR Centre for Mathematical Modelling and Computer Simulation, Apr. 2000 – Jan. 2008
6. Vice-Chancellor, Cochin University of Science and Technology, Kochi, India 682002, Feb. 2008 – Feb. 2009
7. Vice-Chancellor-in-Charge, Kerala University, Aug. 2008 – Dec. 2008
8. Director, NISCAIR, New Delhi, Feb. 2009 – June 2013
9. Director-in-Charge, CSIR Recruitment and Assessment Board, 2011-2013
10. Outstanding Scientist, NISCAIR, New Delhi, July 2013 – Aug. 2013
11. Outstanding Scientist, NIIST, Thiruvananthapuram, Aug. 2013 -
12. DAAD Exchange Fellow, DLR Inst. of Structural Mechanics, Braunschweig, Germany, Jun. 1983 - Sep. 1984

**Membership in Professional Societies:**

1. Fellow of the Indian Academy of Sciences
2. Fellow of Indian National Science Academy
3. Life Member of the Indian Society for Theoretical and Applied Mechanics
4. Life Member of the Indian Society for Advancement of Materials and Process Engineering
5. Founder Life Member of the Indian Society for Mathematical Modelling and Computer Simulation.
6. Member, Current Science Association
7. Fellow, World Innovation Foundation
8. Fellow, Society for Information Science

**Major Achievements/areas of work during the last 40 years:**

1. About 30 papers in the area of non-linear structural mechanics - contributed a definitive resolution to the long standing controversy regarding the physics and the mathematical modelling of the non-linear vibrations of thin shells
2. provided clear insight into the controversial use of the Berger approximation in non-linear structural mechanics
3. a definitive clarification about the correct way to model the in-plane deformation and to interpret the non-linear frequencies in a finite element model of non-linear beam and plate vibrations
4. resolution of a controversy about whether finite element models could recover the second spectrum of the Timoshenko beam theory
5. founding the basic principles of a science of the finite element formulation of constrained multi-strain field problems - statement of conceptual scheme, definition of the appropriate vocabulary for this new area, design of operational procedures to remove inconsistencies in constrained strain-field definitions and for error analyses etc. and the design and development of a library of field-consistent elements. The SS Bhatnagar Prize for

- Engineering in 1990 (the highest award for scientific research in the country) was awarded for this work.
6. the finite element analysis of composite structures - development of FEPACS - a general purpose package for analysis of composite structures.
  7. Development of finite elements based on higher order theories.
  8. Studies on finite element modelling of structural dynamics.
  9. Production run stress analysis of aircraft structures
  10. Studies on Scientometrics
  11. Studies in Quantitative Sociology

### **Publications in General:**

200 publications in International Journals; over 300 short papers, reports, technical memoranda, papers/lectures at Symposia and Conferences etc.

### **Selected Publications:**

- G. Prathap, T. Varadan, The inelastic large deformation of beams, *J. Appl. Mech.*, 43 (1976), pp. 689-690
- Prathap, G. and Varadan, T. K. (1977). On the Nonlinear Vibrations of Rectangular Plates. *Journal of Sound and Vibration*, 56(4):521–530.
- Prathap G and Pandalai KAV (1978), The role of meridian surface curvature in large amplitude flexural vibrations of thin shells, *J. Sound Vib.* 60, 119–131.
- Prathap G., Varadan T.K.: The large amplitude vibration of hinged beams. *Comput. Struct.* 9, 219–222 (1978)
- G. Prathap 1978a *Journal of Sound and Vibration* 56, 303-305. Comments on the large amplitude asymmetric vibrations of some thin shells of revolution.
- G. Prathap 1978b *Journal of Sound and Vibration* 59, 295-297. On the large amplitude vibration of circular cylindrical shells.
- Bhashyam, G. R. and Prathap, G., ‘Galerkin finite element method for non-linear beam vibrations’, *Journal of Sound and Vibration* 72(2), 1980, 191–205.
- Bhashyam, G. R., and Prathap, G., 1981, “The Second Frequency Spectrum of Timoshenko Beams,” *J. Sound Vib.*, 76(3), pp. 407–420.
- Prathap, G. and Bhashyam, G. R. 1982. Reduced integration and the Shear-Flexible Beam Element. *Int. J. Numer. Meth. Engng.*, 18: 195–210
- Prathap, G., 1983, “The Two Frequency Spectra of Timoshenko Beams—A Re-Assessment,” *J. Sound Vib.*, 90(3), pp. 443–446.
- Prathap, G. and Viswanath, S. 1983. An Optimally Integrated Four-node Quadrilateral Plate Bending Element. *Int. J. Numer. Meth. Engng.*, 19: 831–840.
- Prathap, G. 1985. The Curved Beam/Deep Arch/Finite Ring Element Revisited. *Int. J. Numer. Meth. Engng.*, 21: 389–407.
- Prathap, G. 1985. An Additional Stiffness Parameter Measure of Error of the Second Kind in the Finite Element Method. *Int. J. Numer. Meth. Engng.*, 21: 1001–1012.
- Prathap G, Ramesh Babu C. A field-consistent three-noded quadratic curved axisymmetric shell element. *Int J Numer Methods Eng* 1986;23:711–723
- Ramesh Babu C, Prathap G. A field consistent two noded curved axisymmetric shell element. *Int J Numer Meth Engng* 1986; 23:1245-1261.
- Prathap, G. and Babu, C. R. 1986. An Isoparametric Quadratic Thick Curved Beam Element. *Int. J. Numer. Meth. Engng.*, 23: 1583–1600.
- Somashekar B.R., Prathap G., Ramesh Babu C., A field-consistent four noded laminated anisotropic plate/shell element, *Computers & Structures* 25, 1987, 345–353

Babu C R, Prathap G 1988 A linear thick curved beam element. *Int. J. Numer. Methods Eng.* 23: 1313–1328

Naganarayan BP, Prathap G. Force and moment corrections for the warped four-node quadrilateral plane shell element. *Computers and Structures* 1989; 33(4):1107-1115.

T.K. Varadan, G. Prathap, H.V. Ramani, Nonlinear free flexural vibration of thin circular cylindrical shells, *AIAA Journal* 27 (1989) 1303–1304

Prathap G. and B. P. Naganarayana. "Analysis of Locking and Stress Oscillations in a General Curved Beam Element," *International Journal of Numerical Methods for Engineering*, 30: 177-200, (1990).

Naganarayana, B. P. and G. Prathap. "Consistency Aspects of Out-of-Plane Torsion and Shear in a Quadratic Curved Beam Element," *International Journal of Numerical Methods for Engineering*, 30: 431-443, (1990).

Prathap G, Naganarayana B P 1991 FEPACS, A finite element package for analysis of composite structures. PD ST 9139, National Aerospace Laboratories, Bangalore

Prathap, G. and Shashirekha, B. R. 1993. Variationally Correct Assumed Strain Field for the Simple Curved Beam Element. *Comput. Struct.*, 47: 1071–1073

Prathap G 1993 *The finite element method in structural mechanics* (Dordrecht: Kluwer Academic Publications)

Prathap G, Naganarayana B P, Somashekar B R 1994 FEPACS (Version 2.0); Finite element package for analysis of composite structures — Theoretical manual. PD ST 9405, National Aerospace Laboratories, Bangalore

P.R. Mohan, B.P. Naganarayana, and G. Prathap. Consistent and variationally correct finite elements for higher-order laminated plate theory. *Composite Structures*, 29(4):445–456, 1994

R.U. Vinayak, G. Prathap, B.P. Naganarayana, Beam elements based on a higher order theory – I. Formulation and analysis of performance, *Comput Struct*, 58 (4) (1996), pp. 775–789

Naganarayana B.P., Rama Mohan P. and Prathap G. (1997): Accurate thermal stress predictions using C0 continuous higher-order shear deformable elements. - *Comput. Methods in Applied Mech. and Eng.*, vol.144, pp.61-75.

S. Raja, P. K. Sinha, G. Prathap, and P. Bhattacharya. Influence of one and two dimensional piezoelectric actuation on active vibration control of smart panels. *Aerospace Science and Technology*, 209-216:6, 2002.

Marur S.R., Prathap G.: Non-linear beam vibration problems and simplifications in finite element models. *Comput. Mech.* 35, 352–360 (2005)