

Detailed Profile – Dr. Gangan Prathap

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

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 - date
9. DAAD Exchange Fellow, DLR Inst. of Structural Mechanics, Braunschweig, Germany, Jun. 1983 - Sep. 1984

Membership on Committees:

- Member, International Panel of Reviewers of Applied Mechanics Reviews, 1977-1984
- Assoc. Editor, J. of the Aero. Soc. of India 1980-82
- Member, Divisional Advisory Committee, Dept. of Aero. Engg., IIT Madras 1980-81
- Member, Management Council of the National Aeronautical Laboratory, 1988-91
- Member, Indian National Committee for International Union of Theoretical and Applied Mechanics (IUTAM), 1988-1993
- Member, General Assembly, International Union of Theoretical and Applied Mechanics (IUTAM), 1991-1993
- Member, Research Council, RRL-Bhopal, Dhanbad, 2004-2006
- Member, Research Council, CBRI, Roorkee, 2004-2006
- Member, Research Council, NGRI, Hyderabad, 2004-2006
- Member, Research Council, CMRI, Dhanbad, 2001-2003
- Member, Research Council, SERC, Chennai, 2001-2003
- Member, Governing Council, INCOIS, Hyderabad, 2000-2002
- Member, Management Committee, NAL, Bangalore, 1988-1991
- Member, Management Committee, CFTRI, Mysore, 2000-2003
- Member, DOD Steering Committee for INDOMOD and SATCORE, 2000-2002
- Member, DST Steering Committee on HRD in Earth Sciences, 2000
- Member, DOD Steering Committee for National Data Buoy Programme, 2000-2002

- Member-Secretary, Advisory Committee, C-MMACS, 2000-
- Member, Editorial Board, RESONANCE - Journal of science education, Indian Academy of Sciences 1996-2002
- Editor, SADHANA, Journal of Engineering Sciences, Indian Academy of Sciences, 1999-2006
- Editor-in-Chief, Computers, Materials and Continua, 2005-2006
- Member, Editorial Board, International Journal for Engineering Analysis and Design
- Member, Editorial Board, Computer Modelling & Simulation in Engineering
- Member, Editorial Board, International Journal of Computational Engineering Science
- Member, Technology Advisory Board for Engineering Sciences & Technology, CSIR
- Member, Engineering Sciences Research Committee, CSIR
- Member, Mathematical Sciences Research Committee, CSIR
- Member, Expert Committee on Engineering, CSIR
- Member, Publications Committee, Indian Academy of Sciences, 1992-94
- Member, Sectional Committee for Engineering and Technology, Indian Academy of Sciences, 1995-99, 2004-2006
- Member, Sectional Committee for Engineering and Technology, Indian National Science Academy, 2003-2005
- Member, Review Committee on PG Education in Engineering, AICTE
- Member, Review Committee for Aero Soc of India syllabus, AICTE, 1998
- Member, Board of Research in Nuclear Sciences Panel
- Member, Special Task Force for Dev. of Indigenous Finite Element Package, ADA
- Chairman, CSIR Task Force for Mission Mode Project on Mathematical Modelling and Computer Simulation, 2004-2007.
- Member, Academic Council, Homi Bhabha National Institute, Mumbai, 2006-
- Member, Research Council, Vellore Institute of Technology, 2005-
- Member, Higher Education Council, Kerala
- Member, Governing Council, Technopark, Kerala
- Member, Governing Council, Culture and Heritage Studies, Kerala

- From 1977 till now, reviewed papers for

1. J. of Sound & Vibration	12. Comm. in App. Num. Meth.
2. J. of the Aero. Soc. of India	13. Proc. Earth & Planetary Sciences
3. Indian J. of Pure and Applied Physics	14. Current Science
4. A.I.A.A. J.	15. Finite Elements in Anal. & Design
5. Int. J. Num. Meth. Eng.	16. Mechanics Research Communications
6. J. of the Indian Institute of Science	17. Bulletin of Materials Science
7. SADHANA, Proc. in Eng. of the Indian Academy of Science	18. J. of Math. & Phy. Sciences
8. J. of Spacecraft Technology	19. J. of Engg. Mech., ASCE
9. Computers and Structures	20. Int. J. Engg. Anal. & Design
10. Int. J Solids and Structures	21. Computer Modelling & Simul. Engg.
11. Nuclear Engg. And Design	22. Int. J Comp. Engg. Sc.

Membership of 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

Major achievements/areas of work in which engaged during last 25 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

Human Resources Development

Have supervised the training programmes and guided the M.Tech. and Ph.D. theses of several students and colleagues as follows:

M.Tech.

24. R Sreedeeep's titled 'Finite element analysis and optimization of dome type stiffened pressure vessel', submitted to Manipal Institute of Technology, 2001.
23. M P Suchita's titled 'Nonlinear Analysis of Beams', submitted to Visveswariah Technological University, 2000.
22. P S Giridhar's titled 'Smart finite beam element formulation and active buckling control studies', submitted to Visveswariah Technological University, 2000.
21. Hema Kamat's titled 'Study of locking phenomena in finite element method', submitted to Visveswariah Technological University, 2000.
20. R Keshav Prabhu's titled 'Structural analysis of wing root fitting test box', submitted to Mangalore University in 1999.
19. Prashanth Patil's titled 'Computing of buckling factors for the cover sheets of box-beams and SARAS Aileron, submitted to Karnatak University, 1999.
18. V Nagabhushana's titled 'Finite element modelling and preliminary analysis of axial flow compressor', submitted to KREC, Surathkal in 1997.
17. V G Palaksha's titled 'Analysis of bunkers by finite element method using FEPACS' submitted to Bangalore University in 1996.
16. B P Rangaraju's titled 'Analysis of balanced cantilever bridge deck by finite element method using FEPACS' submitted to Bangalore University in 1996.
15. G Suresh Gupta's titled 'Visualisation tools for a finite element software system - FEPACS', submitted to the University of Mysore in 1995.

14. D Praveen Kumar's titled 'Interactive structured mesh generation for a finite element software', submitted to the University of Mysore in 1995.
13. B G Manjunatha's titled 'NASTRAN and FEPACS: A comparative study on the performance of a few elements,' submitted to Manipal Institute of Technology in 1994.
12. D S Puttaraju's titled 'Analysis of slab bridge deck and T-beam bridge deck by the finite element method,' submitted to Bangalore University in 1994.
11. K Guruprasad's titled 'Analysis of cantilever support for intake structure by the finite element method,' submitted to Bangalore University in 1994.
10. B Naveen's titled 'Optimum design of laminated composite material panels' submitted to University of Calicut in 1994.
9. S A Virupaksha's titled 'Development of an expert system advisor for general purpose finite element modelling for 2-dimensional structural analysis', submitted to K.R.E.C. Surathkal in 1993.
8. B R Shashirekha's titled 'Design, development and testing of a field-consistent 9-noded degenerate shell element', submitted to Bangalore University in 1992.
7. M Kuriakose Mathew's, titled 'Design, development and testing of 8-noded composite shear flexible consistent degenerated shell element for FEPACS', submitted to K.R.E.C. Surathkal in Feb. 1991.
6. S Veeraraghavan's, titled, 'An expert system for a 3D finite element package with adaptive mesh refinement', submitted to Bangalore University in 1991.
5. T Vishnu Prasad's, titled 'Design, development and testing of quadratic, anisotropic shear flexible field-consistent beam element in SAPIV', submitted to Anna University for ME Degree in Jan. 1989.
4. P C Parameswarappa's, titled 'Finite element analysis of doubly curved shells', submitted to K.R.E.C. Surathkal in Apr. 1988.
3. B S Madhusudan's, titled 'Finite element analysis of plates and shells using field-consistent shear flexible four-noded quadrilateral element', submitted to K.R.E.C. Surathkal in Apr. 1987.
2. B Sudhakar's titled 'Geometrically non-linear beam stiffener finite element' submitted to IIT Madras in Dec. 1987
1. B P Naganarayana's, titled 'Field-consistency interpretation of the 8-Node isoparametric plate bending element' submitted to IIT Madras in Dec. 1986.

Ph.D.

5. P Jafarali's titled, 'Error analysis of finite element elastomechanics using function space approach', submitted to NIT, Calicut, 2007.
4. S Raja's titled, 'Distributed active vibration control of laminated composite sandwich beams, plates and shells', IIT Kharagpur, 2003.
3. B P Naganarayana's, titled, 'Consistency and correctness in quadratic displacement finite elements', Faculty of Engineering, Indian Institute of Science in August 1991.
2. R Gopalan's, titled, 'Hygro-thermal effects on adhesively bonded joints', Faculty of Engineering, Indian Institute of Science in June 1989.
1. C Ramesh Babu's, titled, 'Field-consistency in the finite element formulation of multi-strain-field problem in structural mechanics', IIT Madras, Dec. 1985.

Examiner for theses

- M.Tech Theses - Mangalore University, Bharathiar University
- M.S. - IIT Madras
- Ph.D. - IISc Bangalore, IIT Madras, Kerala University, IIT Kharagpur

Deputations / Visits abroad:

Duration and year of visit	Purpose of visit and programme under which visit was made	Countries Visited
5 days – Oct. 26-30, 2002	To present invited paper at Indo-South African Workshop on Advanced Computing	South Africa
6 days – July 1-7, 2002	To present paper at Karl Popper 2002	Austria
7 days – Jun. 2000	Exploratory visit on setting up IFCER (Indo-French Centre on Environmental Research)	France
4 days - Sep. 1996	To present invited paper at APCOM '96 Conf. at Seoul	S. Korea
10 days - Sep. 1996	NAL-CAE Jt. Programme	China
6 months - Apr.-Oct. 1989	DLR-CSIR Programme	West Germany
2 weeks - May 21-June 2, 1988	Visit of Indian delegation to U.S.S.R. under Indo-Soviet agreement on Science & Technology	U.S.S.R.
4 weeks - Apr. 22-May 22, 1987	DFVLR-CSIR Special Program	W. Germany
3 weeks - June 15-July 4, 1986	To receive capability demonstration of software	U.S.A.
1 week - June 6-14, 1986	To present a paper at a conference in Beijing	China
16 months - June 1983-Sep. 1984	DAAD Exchange Fellow	W. Germany

Industrial Consultancies:

- Consultant to the AR and DB project 'Non-linear analysis of anisotropic multi-layered structures is using the finite element method' at IIT Madras under Drs. K. A. V. Pandalai and T. K. Varadan.
- Advisory consultant to a project 'Stress and vibration analysis of turbine blade/shroud arrangement' with GTRE, Bangalore.

Publications

- 90 publications in International Journals; over 300 short papers, reports, technical memoranda, papers/lectures at Symposia and Conferences etc.
- 1 paper with over 100 citations, another 10 papers with over 20 cumulative citations and another 17 papers with 10-19 cumulative citations.
- Book titled Finite Element Method in Structural Mechanics, Kluwer Academic Publishers, Dordrecht, Holland, 1993.
- Book length review titled The Displacement Type Finite Element Approach - From Art to Science, Progress in Aerospace Sciences, an International Review Journal, 295-405, (1994).
- Guest Editor, Special Issue of SADHANA on Computational Structural Mechanics, Vol. 21 Part 5, Oct. 1996.
- Editor, 220 page Directory of Aeronautical Engineering, for Silver Jubilee Meeting of AR&DB, May 1996.
- Editor, 35 years of Aerospace Structural Engineering: 1962-1997. The story so far ..., a history of NAL's Structures Division, 1997.
- Guest Editor (jointly with T K Varadan), Special Issue of SADHANA on Nonlinear Structural Analysis, Vol. 25, Part 4, Aug. 2000.

Up-to-date List of Publications

a) Research Papers Published in Full

94. G Prathap and V Senthilkumar, 2008, Making sense of the quadrilateral area coordinate membrane elements, *CMAME to appear*.
93. Surendra Kumar and G Prathap, 2008, Mesh distortion, locking and the use of metric trial functions for displacement type finite elements, *Structural Engineering and Mechanics*, 29, 289-300.
92. G Prathap, S Manju and V Senthilkumar, 2007, The unsymmetric finite element formulation and variational incorrectness, *Structural Engineering and Mechanics*, 26, 31-42.
91. P Jafarali, Mohammed Ameen, Somenath Mukherjee and Gangan Prathap, 2007, Variational correctness and Timoshenko beam finite element elastodynamics, *Journal of Sound and Vibration*, 299, 196-211.
90. G Prathap, V Senthilkumar and S Manju, 2006, Mesh distortion immunity of finite elements and the best-fit paradigm, *SADHANA*, 31, 505-514.
89. K Sangeeta, Somenath Mukherjee and Gangan Prathap, 2006, Conservation of best-fit paradigm at an element level, *Int J Comp Met in Eng Sc and Mech*, 7, 1-12.
88. K Sangeeta, Somenath Mukherjee and Gangan Prathap, 2005, A function space approach to study rank deficiency and spurious modes in finite elements, *Structural Engineering and Mechanics*, 21, 539-551.
87. Somenath Mukherjee, P Jafarali and Gangan Prathap, 2005, A variational basis for error analysis in finite element elastodynamic problems, *Journal of Sound and Vibration*, 285, 615-635.
86. S R Marur and G Prathap, 2005, Non-linear beam vibration problems and simplifications in finite element models, *Computational Mechanics*, 35, 352-360.
85. P Jafarali, L Chattopadhyay, G Prathap and S Rajendran, 2004, Error analysis of a hybrid beam element with Timoshenko stiffness and classical mass, *International Journal of Computational Engineering Science*, 5, 495-508.
84. S Raja, R Sreedeeep and G Prathap, 2004, Bending behavior of hybrid-actuated piezoelectric sandwich beams, *Journal of Intelligent Material Systems and Structures*, 15, 611-619.
83. S Raja, D Dwarakanathan, P K Sinha and G Prathap, 2004, Bending behavior of piezo-hydrothermo-elastic smart laminated composite flat and curved plates with active control, *Journal of Reinforced Plastics and Composites*, 23, 265-290.
82. S Raja, P K Sinha, G Prathap and D Dwarakanathan, 2004, Influence of active stiffening on dynamic behaviour of piezo-hydro-thermo-elastic composite plates and shells, *Journal of Sound and Vibration*, 278, 257-283.
81. S Raja, P K Sinha, G Prathap and D Dwarakanathan, 2004, Thermally induced vibration control of composite plates and shells with piezoelectric active damping, *Smart Materials and Structures*, 13, 939-950.
80. S Raja, P K Sinha and G Prathap, 2003, Active stiffening and active damping effects on closed loop vibration control of composite beams and plates, *J of Reinforced Plastics*, 22, 1101-1121.
79. G Prathap, 2003, A soft mathematical model for brain drain, *Current Science*, 85, 593-596.
78. G Prathap and S Mukherjee, 2003, The engineer grapples with Theorem 1.1 and Lemma 6.3 of Strang and Fix, *Current Science*, 85, 989-994.
77. L Chattopadhyay and G Prathap, 2003, The dynamics of box beams, *Journal of Aerospace Sciences and Technologies*, 55, 260-276.
76. S Raja, G Prathap and P K Sinha, 2002, Active vibration control of composite sandwich beams with piezoelectric extension-bending and shear actuators, *Smart Mater. Struct.*, 11, 63-71.

75. S Mukherjee and G Prathap, 2002, Analysis of delayed convergence in the three-noded Timoshenko beam element using the function space approach, *Sadhana - Academy Proceedings in Engineering Sciences*, (27), 5 pp. 507-526.
74. S Raja, P K Sinha, and G Prathap, 2002, Influence of one and two dimensional piezoelectric actuation on active vibration control of smart panels, *Aerospace Science and Technology*, 6, 202-219.
73. G Prathap and D V T G Pavan Kumar, 2001, Error analysis of Timoshenko beam finite element dynamic models, *Int. J. Computational Engg. Sc.*, 2, 1-10.
72. S Mukherjee and G Prathap, 2001, Analysis of shear locking in Timoshenko beam elements using the function space approach, *Communications in Numerical Methods in Engineering*, Vol.17/6 pp.385-393.
71. S R Marur and G Prathap, 2000, Consistency and correctness evaluation of shear deformable anisoparametric formulations, *Int J. Solids & Structures*, 37, 701-713.
70. S Rajendran and G Prathap, 1999, Eight-node field-consistent hexahedron element in dynamic problems, *Structural Engineering and Mechanics*, 8, 19-26.
69. S Rajendran and G Prathap, 1999, Convergence of eigenvalues of a cantilever beam with 8- and 20-node hexahedral elements, *J. Sound Vib.*, 227, 667-681, 1999.
68. G Prathap, 1999, Towards a science of FEA: Patterns, predictability and proof through some case studies, *Current Science*, 77, 1311-1318.
67. G Prathap, 1999, A Priori error estimation of finite element models from first principles, *Sadhana - Academy Proceedings in Engineering Sciences*, (24), 3 pp. 199-214.
66. B P Naganarayana, P Rama Mohan and G Prathap, 1997, Accurate thermal stress predictions using C^0 continuous higher order shear deformable elements, *Comp. Meth. App. Mech. Eng.*, 144, 61-75.
65. G Prathap, 1997, A field-consistency approach to plate problems, *Structural Engineering and Mechanics*, 5, 853-865.
64. G Prathap and R U Vinayak, 1996, Vibrations of laminated beams using higher-order theory, *Adv. Composite Mater.*, 6, 33-50.
63. G Prathap, 1996, Finite element analysis and the stress correspondence paradigm, *SADHANA*, 21, 525-546.
62. B P Naganarayana, G Prathap and B R Somashekar, 1996, FEPACS - A computational tool for linear structural analysis, *SADHANA*, 21, 653-681.
61. R U Vinayak, G Prathap and B P Naganarayana, 1996, Beam elements based on a higher order theory, Part I: Formulation and analysis of performance, *Computers & Structures*, 58, 775-789.
60. G Prathap, R U Vinayak and B P Naganarayana, 1996, Beam elements based on a higher order theory, Part II: Boundary layer sensitivity and stress oscillations, *Computers & Structures*, 58, 791-796.
59. G Prathap, 1996, Barlow points and Gauss Points and the Aliasing and Best Fit Paradigms, *Computers and Structures*, 58, 321-325.
58. G Prathap and B P Naganarayana, 1995, Consistent thermal stress evaluation in finite elements, *Computers & Structures*, 54, 415-426.
57. B P Naganarayana, P Rama Mohan and G Prathap, 1995, Quadrilateral C^0 laminated plate elements based on a higher order theory, *Int. J. of Engg. Analysis and Design* 2, 157-178.
56. G Prathap, B P Naganarayana and B R Somashekar, 1994, Development of robust finite elements for general purpose structural analysis, *SADHANA*, 19, 289-309.
55. P Rama Mohan, B P Naganarayana and G Prathap, 1994, Consistent and variationally correct finite element for higher order laminated plate theory, *Composite Structures* 29, 445-456.
54. G Prathap, 1994, Locking, rank and singularity of penalty linked stiffness matrix and consistency of strain field, *Computers & Structures*, 52, 35-39.
53. G Prathap, 1994, The science in computation: An engineers' defence, *J. Indian Inst. Sci.*, 74, 569-582.

52. G Prathap and B P Naganarayana, 1992, Stress oscillations and spurious load mechanisms in variationally inconsistent formulations, *Int. J. Num. Meth. Eng.*, 33, 2181-2197.
51. G Prathap and B P Naganarayana, 1992, Field-consistency rules for a three-noded shear flexible beam element under non-uniform mapping, *Int. J. Num. Meth. Eng.*, 33, 649-664.
50. B. P. Naganarayana, G Prathap, B Dattaguru and T S Ramamurthy, 1992, A field-consistent and variationally correct representation of transverse shear strains in the nine noded plate element, *Comp. Meth. App. Mech. Eng.*, 97, 355-374.
49. B P Naganarayana and G Prathap, 1991, Field-consistency analysis of 27-noded hexahedral elements for constrained media elasticity, *Finite Elements in Anal. & Des.*, 9, 149-168.
48. G Prathap and B P Naganarayana, 1990, Analysis of locking and stress oscillations in a general curved beam element, *Int. J. Num. Meth. Eng.*, 30, 177-200.
47. B P Naganarayana and G Prathap, 1990, Consistency aspects of out-of-plane bending, torsion and shear in a quadratic curved beam element, *Int. J. Num. Meth. Eng.*, 30, 431-443.
46. G Prathap and B. Naganarayana, 1990, Consistent force resultant distribution in displacement elements with varying sectional properties, *Int. J. Num. Meth. Eng.*, 29, 775-783.
45. T S Balasubramanian and G Prathap, 1989, A Field-consistent higher order curved beam element for static and dynamic analysis of stepped arches, *Computers and Structures*, 33, 281-288.
44. Satishchandra and G Prathap, 1989, A field-consistent formulation for the eight-noded solid finite element, *Computers and Structures*, 33, 345-355.
43. B P Naganarayana and G Prathap, 1989, Force and moment corrections for the warped 4-node quadrilateral plane shell element, *Computers and Structures*, 33, 1107-1116.
42. B P Naganarayana and G Prathap, 1989, Displacements and stress predictions from field- and line-consistent versions of the 8-node Mindlin element, *Computers and Structures*, 33, 1095-1106.
41. G Prathap, B P Naganarayana and B R Somashekar, 1988, Field-consistency analysis of the isoparametric 8-noded plate bending element, *Computers and Structures*, 29, 857-874.
40. G Prathap and B R Somashekar, 1988, Field- and Edge-Consistency synthesis of a 4-noded quadrilateral plate bending element, *Int. J. Num. Meth. Eng.*, 26, 1693-1708.
39. B S Sarma, T K Varadan and G Prathap, 1988, On various formulations of large amplitude free vibration of beams, *Computers and Structures*, 29, 959-966.
38. G Prathap and C Ramesh Babu, 1987, Field-consistency and violent stress oscillations in the finite element method, *Int. J. Num. Meth. Engng.*, 24, 2017-2033.
37. C Ramesh Babu, G Subramanian and G Prathap, 1987, Mechanics of field-consistency in finite element analysis - a penalty function approach, *Computers and Structures*, 25, 161-173.
36. B R Somashekar, G Prathap and C Ramesh Babu, 1987, A field-consistent 4-noded laminated anisotropic plate/shell element, *Computers and Structures*, 25, 345-353.
35. G Prathap and C Ramesh Babu, 1987, Accurate force evaluation with a simple bi-linear plate bending element, *Computers and Structures*, 25, 259-270.
34. G Prathap, G Subramanian and C Ramesh Babu, 1987, Stress-oscillations in plane stress modelling of flexure - a field-consistency interpretation, *Int. J. Num. Meth. Eng.*, 24, 711-724.
33. C Ramesh Babu and G Prathap, 1986, A field-consistent two-noded curved axisymmetric shell element, *Int. J. Num. Meth. Engng.*, 23, 1245-1261.
32. G Prathap and C Ramesh Babu, 1986, A field-consistent three-noded quadratic curved axisymmetric shell element, *Int. J. Num. Meth. Engng.*, 23, 711-723.
31. C Ramesh Babu and G Prathap, 1986, A linear thick curved beam element, *Int. J. Num. Meth. Engng.*, 23, 1313-1328.
30. G Prathap and C Ramesh Babu, 1986, An isoparametric quadratic thick curved beam element, *Int. J. Num. Meth. Engng.*, 23, 1583-1600.

29. T K Varadan, B S S Kumar and G Prathap, 1986, A general iterative numerical approach to the finite deflection analysis of beams, *Computers and Structures*, 22, 123-130.
28. G Prathap and C Ramesh Babu, 1986, Field-consistent strain interpolations for the quadratic shear flexible beam element, *Int. J. Num. Meth. Engng.*, 23, 1973-1984.
27. G Prathap, 1986, Field-consistent finite elements, *Current Science*, 55, 551-557.
26. G Prathap, 1985, An additional stiffening parameter measure of error of the second kind in the finite element method, *Int. J. Num. Meth. Engng.*, 21, 1001-1012.
25. G Prathap, 1985, The curved beam/deep arch/finite ring element re-visited, *Int. J. Num. Meth. Engng.* 21, 389-407.
24. G Prathap, 1985, The poor bending response of the four node plane stress quadrilateral, *Int. J. Num. Meth. Engng.* 21, 825-835.
23. G Prathap, 1985, A C^0 continuous 4-noded cylindrical shell element, *Computers and Structures*, 21, 995-999.
22. G Prathap, 1985, A simple plate/shell triangle, *Int. J. Num. Meth. Engng.*, 21, 1149-1156.
21. T K Varadan and G Prathap, 1985, Inelastic post-buckling of tapered flexible bars, *Computers and Structures*, 21, 681-690.
20. C Ramesh Babu, B R Somashekar and G Prathap, 1985, Development of a library of field-consistent finite elements, *J. of the Aero. Soc. of India, Special Issue on Finite Elements*, 37, 327-335.
19. B S Sarma, G Prathap and T K Varadan, 1984, Influence of the order of polynomial on the convergence in Ritz finite element formulation of non-linear vibration of beams, *Computers and Structures*, 18, 667-671.
18. G Prathap, 1984, An optimally constrained 4-node quadrilateral thin plate bending element, *Computers and Structures*, 18, 789-794.
17. T K Varadan, V R Dilip and G Prathap, 1984, Nonlinear analysis of a thermally restrained beam, *Mechanics Research Communications*, 11, 61-66.
16. G Prathap and S Viswanath, 1983, An optimally integrated 4-noded quadrilateral plate bending element, *Int. J. Num. Meth. Engng.*, 19, 831-840.
15. G Prathap and G R Bhashyam, 1982, Reduced integration and the shear flexible beam element, *Int. J. Num. meth. Engng.*, 18, 195-210.
14. G R Bhashyam and G Prathap, 1981, The second frequency spectrum of Timoshenko beams, *J. of Sound and Vib.*, 76, 407-420.
13. K Parameswaran, T K Varadan and G Prathap, 1981, Non-linear vibration of beams in an axial force field, *J. Acoust. Soc. of America*, 69, 709-712.
12. G R Bhashyam and G Prathap, 1980, Galerkin finite element method for non-linear beam vibrations, *J. of Sound and Vib.*, 72, 191-203.
11. Raja Mohan and G Prathap, 1980, An acoustic energy analysis and its use to study damage in laminates, *J. of Non-destructive Evaluation*, 1, 225-233.
10. G Prathap and T K Varadan, 1979, Non-linear flexural vibrations of anisotropic skew plates, *J. of Sound and Vib.*, 63, 315-324.
9. G Prathap, 1979, On the Berger approximation - a critical re-examination, *J. of Sound and Vib.*, 66, 149-153.
8. G Prathap and T K Varadan, 1978, The large deformation, postbuckling and catastrophic stability of cantilever columns, *Computers and Structures*, 8, 275-279.
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63. Getting Smart about Indian Science, Workshop on Smart Structures, Aero Soc of India, Bangalore, 2nd December 2006.
62. Nature of Scientific Creativity, Valedictory address, International Conference on Frontiers in Fluid Mechanics, Bangalore University, 28 October 2006.
61. Modelling Indian Science – Outlay vs. Outcome, Seminar on Evaluating and Rating of Research and Educational Institutions in India, INSA, New Delhi, 5th Oct 2006.

60. Peirce, Einstein and Popper and the Logic of Discovery, Keynote lecture, Course on Inverse Modelling, C-MMACS, Bangalore, June 2006.
59. Abductive logic and the field-consistency basis as the best explanation for locking, ICCES 05, Chennai, 1-6 December 2005.
58. Mathematical Modelling, Inaugural Lecture, Workshop on Mathematical Modelling, MES College, Bangalore, 02-03 September 2004.
57. Measurement, Mathematics and Modelling, Inaugural Lecture, Recent Advances in Computational Techniques, BMS College of Engineering, Bangalore, 2 August 2004.
56. Verification, Validation and Variational Correctness in the Finite Element Method, International Conference on Advances in Structural Integrity, IISc, Bangalore, 14-17 July 2004.
55. Computer Aided Design, Analysis and Product Development: Theory and Practice Inaugural Lecture, R V College of Engineering, Bangalore, 19 December 2003.
54. Axioms, Models and Algorithms, Workshop on Finite Element Analysis and Design of Structures (FEADS'03), Valedictory Lecture, SERC, Chennai, 11-12 December 2003.
53. A priori error estimator for FEA of elastodynamic problems, Workshop on Finite Element Analysis and Design of Structures (FEADS'03), SERC, Chennai, 11-12 December 2003.
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50. FEA – Patterns and Perspectives, ISMMACS Conference 2002, 14-15 November 2002, C-MMACS, Bangalore.
49. Modelling from Mountains to Monsoons. Indo-South African Workshop on Advanced Computing, 28-29 October 2002, Pretoria, South Africa.
48. Towards a priori Error Analysis for Finite Element Elastodynamics. Mechanical Engineering Seminar, 13 September 2002, IISc, Bangalore.
47. Verification and Validation in Computational Modelling: A Case Study from FE Dynamics, Valedictory Lecture, Workshop on MATHLAB for Scientists and Engineers MSE 2002, 24 August 2002, Bangalore University.
46. Computational Dynamics of Lumped Mass Systems. Seminar on Structural Dynamics in Civil Engineering: Some Recent Developments, 18 & 19 July 2002, IISc, Bangalore.
45. Computational Modelling and Logic of Discovery, Prof J N Kapur Endowment Lecture, 17th Annual Conference of the Ramanujam Mathematical Society, 13 June 2002, BHU, Varanasi.
44. Extra-variational Simplifications in Finite Element Formulations of Non-linear Vibration Problems Re-visited. ISMMACS Conference 2002, 14-15 November 2002, C-MMACS, Bangalore.
43. Popper and a Proper FEA, Karl Popper 2002 Centenary Congress, 03-07 July 2002, Vienna, Austria.
42. Research Activities at C-MMACS. One-day Symposium on Aerospace Technologies and NAL: Reflections and Perspectives, 29 May 2002, NAL, Bangalore.
41. Wandering about in a dark labyrinth: The role of mathematics in the sciences and engineering, CPYLS Lecture, 31 Oct 2001, NAL, Bangalore.
40. FEA as Fun: Mathematical Games and Metamagical Themas. Three-day Continuing Education Programme on Finite Element Analysis for Mechanical Engineering Problems, 19 October 2001, Sir M Visvesvaraya Institute of Technology, Bangalore (Valedictory Lecture).
39. Computational Structural Mechanics: From Science to Computation. AICTE-ISTE Short Term Course on Computer Applications to Civil Engineering Problems, 03 September 2001, Malnad College of Engineering, Malnad (Inaugural Lecture).

38. From Models to Supermodels: Error Analyses of FEA. AICTE-ISTE Summer School on Advances in Mathematical Modelling and Engineering Solutions, 08 June 2001, Vellore Engineering College, Vellore (Valedictory Lecture).
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36. Introduction to Finite Element Methods. DST Sponsored Course on Contemporary Concepts and Tools in Fold-and-Thrust Belt Deformation, 26 November 2001, C-MMACS, Bangalore.
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34. FE stress analysis as a least action process, error estimates and adaptive meshing. Taylor Memorial Lecture, 45th ISTAM International Conference, 26-29 December, 2000, Sivakasi.
33. Finite element solution to a Dirichlet problem and the best-fit paradigm, Invited lecture, ISMMACS Annual Conference on Mathematical Modelling and Computer Simulation, 23-24 October, Nagpur.
32. Error analysis for finite element elastodynamics, Keynote lecture, 3-Day Workshop on Recent Trends in Structural Dynamics, 21 June 2000, Ghousia College of Engineering, Ramnagaram.
31. Science of FEA, Valedictory lecture at AICTE-ISTE Short term training programme on Recent Numerical Techniques to solve Engineering Problems, June 2000, REC Calicut.
30. Stress correspondence paradigm, Part I and II, Two lectures at AICTE-ISTE Short term training programme on Recent Numerical Techniques to solve Engineering Problems, June 2000, REC Calicut.
29. Differential equations, least action principles, approximate solutions and errors thereof. Inaugural lecture, Summer Workshop on Diff. Eqns. For MSc students, 15 May 2000, IISc, Bangalore.
28. Modelling of Plates, Contact Programme on Sedimentary Basin Modelling, 7 June 2000, C-MMACS, Bangalore.
27. FEA as computation – a philosophical brief, Invited key-note lecture at 2nd Structural Engineering Convention, IIT Bombay, Mumbai, 5-8 January 2000.
26. Toward a science of computational engineering: A case study from finite element dynamics, INSA Lecture 17 April 1999, Bangalore.
25. Toward a science of computational engineering: Patterns, predictability and proof using a case study from finite element dynamics, EASI Lecture, 2 Feb 1999, Bangalore.
24. NAL's Activities and Programmes, IIT-CSIR-Industry Interface, IIT Kharagpur, 17 Mar 1998.
23. Three lectures titled: a) FEA as computation; b) A priori estimation of discretisation errors in FEA; c) The locking phenomenon in FE modelling, AICTE-ISTE Short Term Training Programme on Boundary and Finite Element Methods in Engg. Design, PSG College of Technology, Coimbatore, Mar. 9-20, 1998.
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21. Post-graduate engineering education: Some underlying themes, National Seminar on Aeronautical Education and Human Resource Development, 22-23 November 1996, Chandigarh.
20. A field-consistency approach to plate and shell elements, 12 September 1996, Beijing University of Aeronautics and Astronautics, Beijing, China.
19. Development of 4 node plate bending finite elements for stress analysis, 9 September 1996, China Gas Turbine Establishment, Cheng du, China.
18. Developments in finite elements: From the C-concepts to a package, Symposium on Finite Element Technology in Indian Industry, Madras, June 26-27, 1996.

17. The C-concepts in finite element analysis: From paradigm to package, AR & DB Silver Jubilee Celebrations, Bangalore, May 17-19, 1996.
16. Finite Element Method in Structural Analysis - 6 Lectures, National Metallurgical Laboratory, Jamshedpur, 16-18 January 1996.
15. The C-concepts in Finite Element Analysis: An Epistemological History, Distinguished Alumnus Lecture, Silver Jubilee Function of Dept. of Aero. Engg., IIT Madras and 47th AGM of Aero. Soc., 7 January 1996, Madras.
14. Finite Element Analysis: From Paradigm to Proof, Lecture at IISc, Bangalore, 22 September 1995.
13. Five lectures during the Workshop on Finite Element Method and Applications, Siddaganga Institute of Technology, Tumkur, 4th September to 9th September 1995.
12. Finite Element Analysis - some recent developments, Siddaganga Institute of Technology, Tumkur, 21 July 1995.
11. Complete, Correct and Consistent variational basis for the displacement type finite element method, 27 Jan. 1993, TIFR Centre, Bangalore.
10. Recent Advances in Finite Element Technology, 6 Lectures in the NAL-UNI Course, 22-24 December 1992.
9. Study of errors in the finite element method, Lecture at KREC, Surathkal on 24.04.92
8. Research Contributions of NAL, Lecture at Institution of Engineers, Coimbatore, 21.02.92
 7. A scientific assessment of finite element methodology, Lecture at PSG College of Technology, Coimbatore on 21.02.92
6. Locking in finite element analysis - from superstition to science, Mid-year meeting of the Indian Academy of Science, 26th July 1991.
5. Finite element modelling of constrained media elasticity, 5 Lectures at IIT Madras, April 1-5, 1991.
4. Finite Element Analysis, CEI/KREC Interaction Lectures at Karnataka Regional Engineering College on 22nd and 23rd Feb. 1990, Surathkal, Mangalore.
3. Finite element modelling of elastic plates, Workshop on Mathematical Modelling in Geomechanics, C-MMACS/NAL, Bangalore, Jan. 5-6, 1989.
2. Finite element modelling of plate bending, delivered under Special lecture series at Karnataka Regional Engineering College on 6th April 1988, Surathkal, Mangalore.
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