



Professor Tarun Kant

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Institute Chair Professor

Department of Civil Engineering

Indian Institute of Technology Bombay, Powai, Mumbai-400 076, India

Biography:

Tarun Kant was born on 1 July 1946 at Ballia in Uttar Pradesh, India. He received his BSc degree from the University of Allahabad in 1962, his BTech (Hons) in civil engineering from the Indian Institute of Technology Bombay (IIT Bombay) in 1967 and MTech in civil engineering with specialization in structural engineering from the Indian Institute of Technology Kanpur (IIT Kanpur) in 1969. He spent about one and a half year in a consulting engineering firm in Mumbai before joining IIT Bombay on 20 January 1971 as a Lecturer. He earned his PhD degree while working as a Lecturer from IIT Bombay in 1977. He was selected as an Assistant Professor in 1978 and a Professor in 1986. He has held the positions of the Department Head (2000-2002), the Dean (Planning) of the Institute (2001-2003), the Chairman of the prestigious Joint Entrance Examination (JEE-1998) and the Chairman of the Central Library (1995-1999) with great distinction. He initiated and introduced

many innovations effectively during his tenure. The Institute appointed him as an Institute Chair Professor with effect from 31st December 2009.

Prof. Kant was elected a Fellow of the Indian National Academy of Engineering (INAE) in 1999, a Fellow of the Indian Academy of Sciences (IASc) in 2004, a Fellow of the Indian National Science Academy (INSA) in 2007 and a Fellow of the National Academy of Sciences, India (NASI) in 2011. He is the first and only civil engineer in the country to get elected to all the four national academies. He is also the fourth civil engineer to get elected to the two national science academies (INSA and IASc). He has been visiting professors at University of Wales, Swansea (1979-'82), University of Cambridge (1993) and University of California, Los Angeles (2005).

He is a recipient of the Burmah-Shell Best Paper Prize. He was awarded the 1979 Jawaharlal Nehru Memorial Trust (U.K) Scholarship and the 1992-'93 European Commission (EC) Senior Faculty Exchange Fellowship, both by the Government of India. IIT-Bombay, on 13 March 2007, conferred the 2006 Professor H.H. Mathur Award for Excellence in Research in Applied Sciences in recognition of his outstanding work in the area of Mechanics of Composite Materials and Structures. He also received the 2009 Khosla National Award for his life time achievement in the field of engineering. He is also a recipient of the 2010 IIT Bombay Research Paper Award. IIT Bombay, on 4th April 2012, conferred on him the 2011 Life Time Achievement Award. ICCS17 (17th International Conference on Composite Structures, Porto, Portugal, 17-21 June 2013) honoured him by calling him a legend and recognized him as a pioneer in initiating a new direction in mechanics of composites. He has published more than 135 research papers in refereed journals, 6 chapters in edited books, about 145 papers in conference proceedings, edited 4 books and currently serves on the editorial boards of 5 international journals and in diverse areas of computational structural mechanics. He has supervised 25 PhD theses and over 75 MTech dissertations. He has Research & Citation Standing in terms of h-index of 25 on Web of Science. His current citations are over 1800 on Web of Science

He has carried out 12 sponsored projects and has authored about 21 unpublished reports. He has edited a set of two volumes entitled Finite Elements in Computational Mechanics, Pergamon Press, Oxford, 1985 (ISBN 0-08-031682-2) and has co-edited another volume entitled Advances in Structural Engineering, Quest Publications, Mumbai, 2000 (ISBN 81-87099-08-9).

He served a term on the editorial board of Computational Mechanics – An International Journal and currently serves on editorial boards of 5 international journals: Structural Engineering & Mechanics - An International Journal [Techno-Press], International Journal for Computational Methods in Engineering Science and Mechanics (CMESM) [Taylor & Francis], Computer Modeling in Engineering & Sciences (CMES) [Tech Science Press], Advances in Civil Engineering [Hindawi Publishing Corp.] and International Journal of Computational Methods [World Scientific].

He is responsible for establishing a research school of computational structural mechanics at IIT-Bombay which has influenced many of his colleagues as well. He was elected President of the Indian Society of Theoretical and Applied Mechanics (ISTAM) for two terms (1999 and 2000), has founded Indian Association for Computational Mechanics (IndACM) and Indian Association for Structural Engineering (IASE) and is responsible for organization of biennial ICCMS (International Congress on Computational Mechanics and Simulation) and SEC (Structural Engineering Convention) congresses in the country. He was an INSA nominated Member on the National Committee of International Union of Theoretical & Applied Mechanics (IUTAM) for two 3 year terms: July 2000-June 2003 and January 2008-December 2011. He was also a Member of the General Assembly of IUTAM until 2012. He is presently the Convener and Member of Engineering & Technology Sections of INSA and IASc, respectively.

He has been on the Advisory Panels of many national and international conferences. He has lectured at several universities and research institutions and has participated in numerous conferences and seminars both within and outside India. He was the Convener of a very successful International Conference on Finite Elements in

Computational Mechanics held in 1985 (FEICOM-85) at Bombay. He was also General Chairman of SEC-2000: 2nd Structural Engineering Convention held on 5-8 January 2000 at IIT-Bombay and Chair of ICCMS09: 3rd International Congress on Computational Mechanics & Simulation held on 1-5 December 2009 at IIT-Bombay. He is listed in several Who's Who in the World.

He is a Fellow of The Institution of Engineers (IE) and The Aeronautical Society of India (AeSI), a Member of International Association for Computational Mechanics (IACM) and Life Members of The Indian Society of Theoretical and Applied Mechanics (ISTAM) and Indian Society for Technical Education (ISTE) and Founder Life Member of International Society for Computational Engineering and Science (ISCES), Indian Association for Computational Mechanics (IndACM) and Indian Association for Structural Engineering (IASE). He is also a nominated Fellow of The World Innovation Foundation (U.K).

His research interests lie in the areas of solid mechanics, plates, shells, fibre reinforced polymer composites, refined higher-order theories, thermal stresses, transient dynamics, finite element and other numerical methods, use of polymer composites in construction, mechanics of composite materials and structures & computational mechanics.

He is a consultant to many leading government and private organizations and serves on many national and state research/ advisory/ policy/ selection committees and is a member of several national and international bodies.

Selected Publications:

Estimation of transverse/interlaminar stresses in laminated composites—a selective review and survey of current developments T Kant, K Swaminathan Composite structures 49 (1), 65-75	198 2000
Analytical solutions for the static analysis of laminated composite and sandwich plates based on a higher order refined theory T Kant, K Swaminathan Composite Structures 56 (4), 329-344	186 2002
Higher-order shear deformable theories for flexure of sandwich plates-finite element evaluations BN Pandya, T Kant International Journal of Solids and Structures 24 (12), 1267-1286	182 1988
Numerical analysis of thick plates T Kant Computer methods in Applied Mechanics and engineering 31 (1), 1-18	176 1982
Analytical solutions for free vibration of laminated composite and sandwich plates based on a higher-order refined theory T Kant, K Swaminathan Composite Structures 53 (1), 73-85	166 2001
A refined higher-order C ^o plate bending element T Kant, DRJ Owen, OC Zienkiewicz Computers & Structures 15 (2), 177-183	121 1982
Finite element analysis of laminated composite plates using a higher-order displacement model BN Pandya, T Kant Composites Science and Technology 32 (2), 137-155	109 1988
A simple finite element formulation of a higher-order theory for unsymmetrically laminated composite plates	103 1988

T Kant, BN Pandya
Composite Structures 9 (3), 215-246

A critical review of recent research on functionally graded plates
DK Jha, T Kant, RK Singh 100 2013
Composite Structures 96, 833-849

Flexural analysis of laminated composites using refined higher-order C° plate bending elements
BN Pandya, T Kant 100 1988
Computer Methods in Applied Mechanics and Engineering 66 (2), 173-198

Application of polymer composites in civil construction: A general review
SS Pendhari, T Kant, YM Desai 96 2008
Composite structures 84 (2), 114-124

Free vibration of isotropic, orthotropic, and multilayer plates based on higher order refined theories
T Kant, K Swaminathan 90 2001
Journal of Sound and Vibration 241 (2), 319-327

A critical review and some results of recently developed refined theories of fiber-reinforced laminated composites and sandwiches
T Kant 90 1993
Composite Structures 23 (4), 293-312

A higher-order theory for free vibration of unsymmetrically laminated composite and sandwich plates-finite element evaluations
T Kant 81 1989
Computers & structures 32 (5), 1125-1132

Free vibration analysis of fiber reinforced composite beams using higher order theories and finite element modelling
SR Marur, T Kant 72 1996
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Free vibration of composite and sandwich laminates with a higher-order facet shell element
RK Khare, T Kant, AK Garg 67 2004
Composite Structures 65 (3), 405-418

Behavior of CFRPC strengthened reinforced concrete beams with varying degrees of strengthening
VPV Ramana, T Kant, SE Morton, PK Dutta, A Mukherjee, YM Desai 62 2000
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Analytical solution to the dynamic analysis of laminated beams using higher order refined theory
T Kant, SR Marur, GS Rao 62 1997
Composite Structures 40 (1), 1-9

An unsymmetric FRC laminate C° finite element model with 12 degrees of freedom per node
T Kant, BS Manjunatha 61 1988
Engineering computations 5 (4), 300-308

Closed-form thermo-mechanical solutions of higher-order theories of cross-ply laminated shallow shells
RK Khare, T Kant, AK Garg 60 2003
Composite Structures 59 (3), 313-340

A finite element model for a higher-order shear-deformable beam theory 60 1988

T Kant, A Gupta
Journal of sound and vibration 125 (2), 193-202

Uniaxial and biaxial ratchetting study of SA333 Gr. 6 steel at room temperature
SC Kulkarni, YM Desai, T Kant, GR Reddy, Y Parulekar, KK Vaze 59 2003
International journal of pressure vessels and piping 80 (3), 179-185

Thermal buckling analysis of skew fibre-reinforced composite and sandwich plates using shear deformable finite element models
T Kant, CS Babu 59 2000
Composite Structures 49 (1), 77-85

A refined higher-order generally orthotropic C⁰ plate bending element
BN Pandya, T Kant 57 1988
Computers & structures 28 (2), 119-133

Mindlin plate analysis by segmentation method
T Kant, E Hinton 55 1983
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Finite element transient dynamic analysis of isotropic and fibre reinforced composite plates using a higher-order theory
T Kant, RV Ravichandran, BN Pandya, BN Mallikarjuna 52 1988
Composite Structures 9 (4), 319-342

Uniaxial and biaxial ratchetting in piping materials—experiments and analysis
SC Kulkarni, YM Desai, T Kant, GR Reddy, P Prasad, KK Vaze, C Gupta 48 2004
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T Kant, K Swaminathan 48 2000
Structural Engineering & Mechanics 10 (4), 337-357

Refined higher order finite element models for thermal buckling of laminated composite and sandwich plates
C Sarath Babu, T Kant 40 2000
Journal of thermal stresses 23 (2), 111-130

Large amplitude free vibration analysis of cross-ply composite and sandwich laminates with a refined theory and C⁰ finite elements
T Kant, JR Kommineni 39 1994
Computers & structures 50 (1), 123-134

A higher-order facet quadrilateral composite shell element
T Kant, RK Khare 36 1997
International journal for numerical methods in engineering 40 (24), 4477-4499

Refined theories for composite and sandwich beams with C⁰ finite elements
T Kant, BS Manjunath 35 1989
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T Kant, JR Kommineni 34 1992

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A consistent refined theory for flexure of a symmetric laminate	
BN Pandya, T Kant	34 1987
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Two shear deformable finite element models for buckling analysis of skew fibre-reinforced composite and sandwich panels	
CS Babu, T Kant	33 1999
Composite Structures 46 (2), 115-124	
Finite element transient analysis of composite and sandwich plates based on a refined theory and implicit time integration schemes	
T Kant, JH Varaiya, CP Arora	32 1990
Computers & Structures 36 (3), 401-420	
On accurate estimation of transverse stresses in multilayer laminates	
T Kant, BS Manjunatha	31 1994
Computers & structures 50 (3), 351-365	
Free vibration of symmetrically laminated plates using a higher-order theory with finite element technique	
T Kant	31 1989
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Finite element thermal stress analysis of composite laminates using a higher-order theory	
T Kant, RK Khare	30 1994
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Non-linear dynamics of laminated plates with a higher-order theory and C^0 finite elements	
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AK Garg, RK Khare, T Kant	28 2006
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Higher-order theories for symmetric and unsymmetric fiber reinforced composite beams with C^0 finite elements	
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Vibrations of unsymmetrically laminated plates analyzed by using a higher order theory with a C^0	28 1989

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Higher-order theories for composite and sandwich cylindrical shells with C 0 finite element
T Kant, MP Menon 24 1989
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TS Butalia, T Kant, VD Dixit 22 1990
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Geometrically non-linear transient analysis of laminated composite and sandwich shells with a refined theory and C 0 finite elements
T Kant, JR Kommineni 21 1994
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T Kant, CP Arora, JH Varaiya 21 1992
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Dynamics of laminated composite plates with a higher order theory and finite element discretization
T Kant 21 1988
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SR Marur, T Kant 20 1998
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A comparison of 9 and 16 node quadrilateral elements based on higher-order laminate theories for estimation of transverse stresses
BS Manjunatha, T Kant 20 1992
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Estimation of interlaminar stresses in fibre reinforced composite cylindrical shells
T Kant, MP Menon 20 1991
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SR Marur, T Kant 18 2007
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On evaluation of transverse stresses in layered symmetric composite and sandwich laminates under flexure
BS Manjunatha, T Kant 17 1993

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Free vibration of skew fiber-reinforced composite and sandwich laminates using a shear deformable finite element model
 AK Garg, RK Khare, T Kant 16 2006
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Different numerical techniques for the estimation of multiaxial stresses in symmetric/unsymmetric composite and sandwich beams with refined theories
 BS Manjunatha, T Kant 16 1993
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A general fibre-reinforced composite shell element based on a refined shear deformation theory
 T Kant 16 1992
 Computers & Structures 42 (3), 381-388

Free vibration response of functionally graded thick plates with shear and normal deformations effects
 DK Jha, T Kant, RK Singh 15 2013
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Elasticity solution for cross-ply composite and sandwich laminates
 T Kant, AB Gupta, SS Pendhari, YM Desai 15 2008
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Geometrically non-linear analysis of doubly curved laminated and sandwich fibre reinforced composite shells with a higher order theory and C^0 finite elements
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Coupled shell-fluid interaction problems with degenerate shell and three-dimensional fluid elements
 RK Singh, T Kant, A Kakodkar 13 1991
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Transient dynamics of composite sandwich plates using 4-, 8-, 9-noded isoparametric quadrilateral elements
 T Kant 13 1989
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Numerical analysis of elastic plates with two opposite simply supported ends by segmentation method
 T Kant 13 1981
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An efficient semi-analytical model for composite and sandwich plates subjected to thermal load
 T Kant, SS Pendhari, YM Desai 12 2007
 Journal of Thermal Stresses 31 (1), 77-103

Finite element transient response of composite and sandwich plates with a refined higher-order theory
 T Kant 12 1990
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Cylindrical bending of piezoelectric laminates with a higher order shear and normal deformation theory
 T Kant, SM Shiyekar 11 2008
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Shell dynamics with three-dimensional degenerate finite elements 11 1994

T Kant, S Kumar, UP Singh
Computers & structures 50 (1), 135-146
A C^0 continuous linear beam/bilinear plate flexure element
T Kant, PB Kulkarni 11 1986
Computers & structures 22 (3), 413-425
Transient/pseudo-transient finite element small/large deformation analysis of two-dimensional problems
T Kant, S Patel 10 1990
Computers & Structures 36 (3), 421-427
Finite element stress analysis of unsymmetrically laminated composite plates based on a refined higher-order theory
T Kant, BN Pandya 10 1988
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Free vibration of higher-order sandwich and composite arches, Part I: Formulation
SR Marur, T Kant 9 2008
Journal of Sound and Vibration 310 (1), 91-109
Comparisons of displacement-based theories for waves and vibrations in laminated and sandwich composite plates
MR Chitnis, YM Desai, AH Shah, T Kant 9 2003
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Large amplitude vibration of polymer composite stiffened laminates by the finite element method
S Goswami, T Kant 9 1999
Journal of reinforced plastics and composites 18 (5), 421-436
Pseudo-transient large deflection analysis of composite and sandwich shells with a refined theory
JR Kommineni, T Kant 9 1995
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Geometrically non-linear analysis of symmetrically laminated composite and sandwich shells with a higher-order theory and C^0 finite elements
T Kant, JR Kommineni 9 1994
Composite structures 27 (4), 403-418
Elastic analysis of cylindrical pressure vessels with various end closures
CK Ramesh, T Kant, VB Jadhav 9 1974
International Journal of Pressure Vessels and Piping 2 (2), 143-154
Free vibration of sandwich laminates with two higher-order shear deformable facet shell element models
RK Khare, AK Garg, T Kant 8 2005
Journal of Sandwich Structures and Materials 7 (3), 221-244
Finite elements in computational mechanics: FEICOM-85: proceedings of the international conference held at the Indian Institute of Technology, Bombay, India, 2-6 December 1985
T Kant 8 1985
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Computer analysis of clamped-clamped and clamped-supported cylindrical shells
T Kant, AV Setlur 8 1973

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Static solutions for functionally graded simply supported plates
SS Pendhari, T Kant, YM Desai, CV Subbaiah 7 2012
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A general partial discretization methodology for interlaminar stress computation in composite laminates
T Kant, SS Pendhari, YM Desai 7 2007
Computer Modeling in Engineering and Sciences 17 (2), 135-161

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DK Jha, T Kant, RK Singh 6 2012
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SM Shiyekar, T Kant 6 2011
Composite Structures 93 (12), 3252-3261

An electromechanical higher order model for piezoelectric functionally graded plates
SM Shiyekar, T Kant 6 2010
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Nonlinear analysis of angle-ply composite and sandwich laminates
T Kant, JR Kommineni 6 1994
Journal of Aerospace Engineering 7 (3), 342-352

A stress correction procedure for the analysis of inelastic frames under transient dynamic loads
SR Marur, T Kant 6 1994
Computers & structures 50 (5), 603-613

A finite element-difference computational model for stress analysis of layered composite cylindrical shells
T Kant, MP Menon 6 1993
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Efficient partitioning schemes for fluid-structure interaction problems
RK Singh, T Kant, A Kakodkar 6 1990
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On accurate stress analysis of composite and sandwich narrow beams
T Kant, SS Pendhari, YM Desai 5 2007
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SR Marur, T Kant 5 1998
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Large deflection elastic and inelastic transient analyses of composite and sandwich plates with a refined theory
JR Kommineni, T Kant 5 1993
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 Three-dimensional transient analysis of a single submerged cylindrical shell
 RK Singh, T Kant, A Kakodkar 5 1991
 Engineering computations 8 (3), 195-213
 Stress analysis of transversely loaded functionally graded plates with a higher order shear and normal deformation theory
 DK Jha, T Kant, RK Singh 4 2013
 Journal of Engineering Mechanics 139 (12), 1663-1680
 Free vibration of functionally graded plates with a higher-order shear and normal deformation theory
 DK Jha, T Kant, RK Singh 4 2013
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 A mixed semi analytical solution for functionally graded (FG) finite length cylinders of orthotropic materials subjected to thermal load
 P Desai, T Kant 4 2012
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