

BIO-DATA

1. Name and full correspondence address Jiten Chandra Kalita
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+91-9864152752
3. Institution Indian Institute of Technology Guwahati (IIT Guwahati)
4. Date of Birth 01 September 1968
5. Gender (M/F/T) Male
6. Category Gen/SC/ST/OBC General
7. Whether differently abled (Yes/No) No
8. Academic Qualification (Undergraduate Onwards)

Sl. No	Examination / Degree / Diploma	Year of Passing	Board / University / Institution
1	PhD	2002	Indian Institute of Technology Guwahati
2	MSc	1991	Cotton College, Gauhati University
3	BSc	1985	Cotton College, Gauhati University
4	Pre-University	1985	Cotton College, Gauhati University

9. Ph.D thesis title, Guide's Name, Institute/Organization/University, Year of Award.

PhD Thesis Title: HOC Schemes for Incompressible Viscous Flows: Application and Development

Guide's Name: Profs Anoop K. Dass and Durga Charan Dalal

Department: Mathematics

University: Indian Institute of Technology Guwahati

Year: 2002

10. Work experience (in chronological order).

Sl. No.	Organisation / Institute	Position held	From	To
1	Indian Institute of Technology Guwahati	Professor	30.11.2013	Till date

2	Indian Institute of Technology Guwahati	Associate Professor	21.05.2008	29.11.2013
3	The George Washington University, Washington DC, USA	Visiting Professor	14.05.2011	14.07.2011
4	The George Washington University, Washington DC, USA	Visiting Associate Professor	18.05.2009	14.07.2009
5	Indian Institute of Technology Guwahati	Assistant Professor	22.07.04	20.05.2008
6	The George Washington University, Washington DC, USA	Visiting Assistant Professor	28.06.06	25.12.06
7	Indian Institute of Technology Guwahati	Senior Lecturer	21.07.03	21.07.04
8	The George Washington University, Washington DC, USA	Visiting Assistant Professorial lecturer	16.05.04	14.07.04
9	The George Washington University, Washington DC, USA	Visiting Assistant Professor	26.08.02	14.07.03
10	Bajali College, Pathsala Assam	Senior Lecturer	19.01.93	20.08.02
11	Directorate of Customs and Central Excise, INDIA	Inspector	26.07.91	31.12.92

11. Professional Recognition/ Award/ Prize/ Certificate, Fellowship received by the applicant.

1. National Merit Scholarship from 1983-1990.
2. UGC Fellowship during 199-2001 under FIP to carry out PhD work.

12. Publications (*List of papers published in SCI Journals, in year wise descending order*).

Selected Publications	
Journal papers	
1.	Raghav Singhal and Jiten C Kalita, An efficient explicit jump High Order Compact immersed interface approach for transient incompressible viscous flows, <i>PHYSICS OF FLUIDS</i> , 34 (10): 103606 (2022).
2.	Devanand Jaiswal and Jiten C Kalita, Influence of a circular obstacle on the dynamics of stable spiral waves with straining, <i>Scientific Reports by Nature Publishing</i> 12: 14479, 2022.

3.	Sailen Dutta and Jiten C Kalita, Heat and Mass transfer characteristics of double-diffusive natural convection in a porous annulus: a higher order compact approach, <i>Heat Transfer</i> 51 (1): 140-169, 2022.
4.	Raghav Singhal and Jiten C Kalita, A Novel Higher Order Compact-Immersed Interface Approach For Elliptic Problems, <i>PHYSICS OF FLUIDS</i> , 33 (8): 087112 (2021).
5.	Pankaj Kumar and Jiten C Kalita, A comprehensive study of secondary and tertiary vortex phenomena of flow past a circular cylinder: A Cartesian grid approach, <i>PHYSICS OF FLUIDS</i> 33, 053608 (2021).
6.	Sailen Dutta, Pankaj Kumar and Jiten C Kalita, ψ - v computation of steady state conjugate heat transfer in backward facing step flow, <i>Heat Transfer</i> , 50 (6): 5714-5743, 2021.
7.	Sougata Biswas and Jiten C Kalita, Topology of corner vortices in the lid-driven cavity flow: 2D vis a vis 3D, <i>Archives in Applied Mechanics</i> , 90 (10): 2201-2216, 2020.
8.	Pankaj Kumar and Jiten C Kalita, An efficient Ψ - v scheme for 2D laminar flow past bluff bodies on compact nonuniform grids, <i>International Journal for Numerical Methods in Fluids</i> , 92 (12): 1723-1752, 2020
9.	Devanand Jaiswal and Jiten C Kalita, Effect of straining on spiral wave dynamics in excitable media, <i>Physica D: Nonlinear Phenomena</i> , 409: 132483 (1-15), 2020.
10.	Sailen Dutta, Pankaj Kumar and Jiten C Kalita, Streamfunction-velocity computation of natural convection around heated bodies place in a square enclosure, <i>International Journal of Heat and Mass Transfer</i> , 152: 119550 (1-22), 2020.
11.	H V R Mittal, Jiten C Kalita and Qasem M Al-Mdallal, A hybrid Ψ - v HOC approach for surface tension driven flows in level set framework, <i>Computers and Mathematics with Applications</i> , 79 (8): 2350-2375, 2020.
12.	Jiten C Kalita, Shubham Goyal and Utkarsh Dixit, Simulation of Tumor-induced Angiogenesis by an HOC Approach, <i>Annals of Mathematical Sciences and Applications</i> , 5 (1): 7-39, 2020.
13.	Novel High-Order Compact Approach for Dynamics of Spiral Waves in Excitable Media, with Devanand Jaiswal, <i>Applied Mathematical Modelling</i> , 77: 341-359, 2020
14.	Pankaj Kumar and Jiten C Kalita, A transformation free Ψ - v formulation of the Navier-Stokes equations on compact nonuniform grids, <i>Journal of Computational and Applied Mathematics</i> , 353: 291-317, 2019.
15.	Sougata Biswas and Jiten C Kalita, Moffatt eddies in the driven cavity: a quantification study by an HOC approach, <i>Computers and Mathematics with Applications</i> 76 (3): 471-487, 2018.
16.	Jiten C Kalita, Sougata Biswas and Swapnendu Panda, Finiteness of corner vortices, <i>Zeitschrift fur angewandte Mathematik und Physik</i> , 69 (2): 37 (1-15), 2018
17.	Jiten C kalita, Parikshit Upadhyaya and Murli M Gupta, Optimized BiCGStab based GPU accelerated computation of incompressible viscous flows by the Ψ - v formulation, <i>International Journal of Applied and Computational Mathematics</i> , 3 (Supl 1): S1477-S1495, 2017.
18.	Jiten C Kalita and Shuvam Sen, α -, β -phenomena in the post symmetry break for the flow past a circular cylinder, <i>Physics of Fluids</i> , 29 , 033603 (1-12), 2017
19.	Jiten C Kalita, A dual-purpose High Order Compact approach for pattern formation using Gray-Scott model, <i>International Journal of Applied and Computational Mathematics</i> , 3 (3): 2747-2760, 2017

20.	H V R Mittal, Jiten C Kalita and Rajendra K. Ray, A class of finite difference schemes for interface problems with an HOC approach, <i>International Journal for Numerical Methods in Fluids</i> , 82: 567-606, 2016.
21.	Bidyut B Gogoi and Jiten C Kalita, A biharmonic approach for the global stability analysis of 2D incompressible viscous flows, <i>Applied Mathematical Modelling</i> , 40: 6831-6849, 2016
22.	Rajendra K Ray and Jiten C Kalita, Higher-order-compact simulation of unsteady flow past a rotating cylinder at moderate Reynolds numbers, <i>Computational and Applied Mathematics</i> , 35: 219-250, 2016.
23.	Shuvam Sen and Jiten C Kalita, A 4OEC scheme for the biharmonic steady Navier-Stokes equations in non-rectangular domains, <i>Computer Physics Communications</i> , 196: 113-133, 2015
24.	Bidyut B Gogoi and Jiten C Kalita, Global two-dimensional stability of the staggered cavity flow with an HOC approach, <i>Computers and Mathematics with Applications</i> , 67: 569-590, 2014.
25.	Jiten C Kalita, Effect of boundary location on the steady flow past an impulsively started circular cylinder, <i>International Journal of Computing Science and Mathematics</i> , 5 (3): 252-279, 2014.
26.	Jiten C Kalita, A super-compact higher order scheme for the unsteady 3D incompressible viscous flows, <i>Computational and Applied Mathematics</i> , 33 (3), 717-738, 2014.
27.	Shuvam Sen and Jiten C Kalita, Tackling Problems of Moving Boundaries Using the Biharmonic Approach, <i>International Journal for Computational Methods in Engineering Science & Mechanics</i> , 15: 309-321, 2014
28.	Jiten C Kalita and Shuvam Sen, Unsteady separation leading to secondary and tertiary vortex dynamics: the sub- α and sub- β phenomena, <i>JOURNAL OF FLUID MECHANICS</i> , 730: 19-51, 2013.
29.	Shuvam Sen, Jiten C Kalita and M M Gupta, A robust implicit compact scheme for two-dimensional unsteady flows with a biharmonic stream function formulation, <i>Computers and Fluids</i> , 84: 141-163, 2013.
30.	Shuvam Sen and Jiten C Kalita, The Biharmonic Approach for Unsteady Flow Past an Impulsively Started Circular Cylinder; <i>Communications in Computational Physics</i> , 12 (4): 1163-1182, 2012.
31.	Jiten C Kalita and Shuvam Sen, Triggering Asymmetry for Flow Past Circular Cylinder at Low Reynolds Numbers, <i>Computers and Fluids</i> , 59: 44-60, 2012.
32.	Jiten C Kalita and Anoop K. Dass, Higher Order Compact Simulation of Double-Diffusive Natural Convection in a Vertical Porous Annulus; with Anoop K Dass, <i>Engineering Applications of Computational Fluid Mechanics</i> , 5 (3): 357-371, 2011.
33.	Jiten C Kalita and Shuvam Sen, Biharmonic computation of the flow past an impulsively started circular cylinder at Re=200; Lecture Notes in Engineering and Computer Science, 2185 (1): 1805-1810, 2010
34.	Rajendra K Ray and Jiten C Kalita, A transformation-free HOC scheme for incompressible viscous flows on nonuniform polar grids; <i>International Journal for Numerical Methods in Fluids</i> , 62 (6): 683-708, 2010.
35.	Jiten C Kalita and M M Gupta, A Streamfunction-Velocity approach for 2D transient incompressible viscous flows, <i>International Journal for Numerical Methods in Fluids</i> , 62 (3): 237-266, 2010.
36.	Jiten C Kalita and Rajendra K Ray, A transformation-free HOC scheme for incompressible viscous flows past an impulsively started circular cylinder, <i>Journal of Computational Physics</i> 228 (14): 5207-5236, 2009.

37.	S. K. Pandit, Jiten C Kalita and D. C. Dalal, A fourth order accurate compact scheme for the solution of steady Navier-Stokes equations on nonuniform grids; Computers and Fluids, 37(2): 121-134, 2008.
38.	Jiten C Kalita, Anoop K. Dass and Nimisha Nidhi, An efficient transient Navier-Stokes solver on compact nonuniform space grids; with Anoop K. Dass and Nimisha Nidhi, Journal of Computational and Applied Mathematics, 214:148-162, 2008 .
39.	S. K. Pandit, Jiten C Kalita and D. C. Dalal, A transient higher order compact scheme for incompressible viscous flows on geometries beyond rectangular; Journal of Computational Physics, 225 (1): 1100-1124, 2007
40.	Jiten C Kalita and Shuvam Sen, The (9,5) HOC formulation of the transient Navier-Stokes equations in primitive variables; International Journal for Numerical Methods in Fluids, 55 (4): 387-406, 2007.
41.	Jiten C Kalita, Effects of clustering on the simulation of incompressible viscous flows; Engineering Applications of Computational Fluid Mechanics, 1 (1): 36-48, 2007
42.	M M Gupta and Jiten C Kalita, New paradigm continued: further computations with stream-function-velocity formulation for solving Navier-Stokes equations; Communications in Applied Analysis, 10 (4): 461-490, 2006
43.	Jiten C Kalita and Puneet Chhabra, An improved (9,5) higher order compact scheme for the transient two-dimensional convection-diffusion equation; International Journal for Numerical Methods in Fluids, 51 (7): 703-717, 2006
44.	Jiten C Kalita, Puneet Chhabra and Sudhanshu Kumar, A semi-discrete higher order compact scheme for the unsteady two-dimensional Schrödinger equation; Journal of Computational and Applied Mathematics, 197 (1): 141-149, 2006.
45.	M M Gupta and Jiten C Kalita, A new paradigm for solving Navier-Stokes equations: stream-function-velocity formulation, Journal of Computational Physics, 207 (1): 52-68, 2005.
46.	Jiten C Kalita, Anoop K. Dass and D. C. Dalal, A transformation-free HOC scheme for the steady-state convection-diffusion on nonuniform grid; International Journal for Numerical Methods in Fluids, 44 (1): 33-53, 2004
47.	Jiten C Kalita, D. C. Dalal and Anoop K. Dass, A class of higher order compact schemes for the unsteady two-dimensional convection-diffusion equations with variable coefficients International Journal for Numerical Methods in Fluids, 38 (12): 1111-1131, 2002.
48.	Jiten C Kalita, D. C. Dalal and Anoop K. Dass, A fully compact HOC simulation of the steady-state natural convection in a square cavity; Physical Review E, 64 (6): 066703 (1-13), 2001.

Conference papers

1.	HOC Simulation of Barkley Model in Excitable Media , with Devanand, Proceedings of International Conference on Frontiers in Industrial and Applied Mathematics (FIAM-2018), AIP Conf. Proc. 1975, 030011-1-030011-4 (2018); doi: 10.1063/1.5042181.
2.	An HOC approach for patterns using Gray-Scott model , AIP Conference Proceedings : International Conference on Numerical Analysis and Applied Mathematics 2016, Greece, AIP Conf. Proc. 1863, 490004 (2017); doi: 10.1063/1.4992654.
3.	Moffatt vortices in the lid-driven cavity flow , with Sougata Biswas, Journal of Physics Conference Series 759(1). January 2016. DOI: 10.1088/1742-6596/759/1/012081.
4.	A Fourth Order Compact ADI method for the transient three-dimensional diffusion equation with a source term ", with Bidyut B Gogoi, Proceedings of the Sixth International Conference on Theoretical, Applied, Computational and Experimental Mechanics (ICTACEM 2014), December 29-31, 2014, IIT Kharagpur: paper no. 46
5.	GPU accelerated flow computation by the streamfunction-velocity (Ψ-

	v) formulation , with Parikshit Upadhyaya and Murli M Gupta, AIP Conference Proceedings : International Conference on Numerical Analysis and Applied Mathematics 2014, Greece, AIP Conf. Proc. 1648, 470004-1- 470004-4; doi: 10.1063/1.4912681.
6.	On the global instability of square and cross lid-driven cavity flows with a pure stream-function-velocity (Ψ-v) approach , with Bidyut B Gogoi, in the proceedings of International Conference on Computer Aided Engineering (CAE 2013), December 19-21, 2013, IIT Madras: pp.314-319.
7.	An efficient higher order accurate scheme for two-dimensional Immersed Interface Problems with Rajendra K. Ray, in the third International Conference on Meta Computing, December 6-7, 2012, Bhubaneswar INDIA.
8.	Oscillatory flow past an inclined square cylinder at low Reynolds numbers ; with Murli M Gupta, in AIP Conference Proceedings Volume 1479: International Conference on Numerical Analysis and Applied Mathematics 2012, Greece: pp.1105-1108
9.	Investigation on drag change of a cylinder performing rotatory oscillation ; with Shuvam Sen, in Book of Papers Blubof2011 IUTAM Symposium on Bluff Body Flows, Dec. 12-Dec. 16, 2011, IIT Kanpur, India.: pp 291-294.
10.	Biharmonic computation of the flow past an impulsively started circular cylinder at Re=200 ; with Shuvam Sen, in Proceedings of the World Congress on Engineering 2010 Vol III WCE 2010, June 30 - July 2, 2010, London, U.K.: pp. 1805-1810.
11.	Simulation of the Laminar Flow Past a Square Cylinder by the Ψ-v formulation ; with Murli M Gupta, in AIP Conference Proceedings Volume 1168: International Conference on Numerical Analysis and Applied Mathematics 2009, Greece: Volume 1: pp. 1166-1169.
12.	An efficient HOC scheme for transient convection-diffusion-reaction equations with discontinuous coefficients and singular source terms ; with Rajendra K Ray and Anoop K Dass, in Proceedings of Applied Mathematics and Mechanics 7, 1025603-1025604 (2007) / DOI 10.1002/pamm.200700967.
13.	An efficient compact formulation for the transient Navier-Stokes equations in biharmonic form; with Murli M Gupta, in International Congress on Industrial and Applied Mathematics, Zurich, Switzerland, 16-20 July, 2007.
14.	An efficient HOC scheme for 1D elliptic equations with discontinuous coefficients and singular source terms using nonuniform space grids; with Rajendra K Ray and Anoop K Dass, in Indo-Australian Workshop and Symposium in CFD 2007, IIT Roorkee, India, 12-14 April , 2007
15.	Recent trends in HOC schemes for solving Navier-Stokes equations; in Indo-Australian Workshop and Symposium in CFD 2007, IIT Roorkee, India, 12-14 April, 2007
16.	HOC computation of two-sided lid-driven cavity flow; with Niranjana Kumar and Anoop K Dass, in the proceedings of the second International conference on computational mechanics and simulation, IIT Guwahati, India, Dec. 8-10, 2006; vol II, pp 1695-1700
17.	Numerical investigation of vortical evolution in a backward constricted channel; with S. K. Pandit and D. C. Dalal, in the proceedings of the second International conference on computational mechanics and simulation , IIT Guwahati, India, Dec. 8-10, 2006; vol II, pp 1274-1280.

18.	HOC formulation of the transient Navier-Stokes equations in primitive variables ; with Shuvam Sen, in International Congress of Mathematicians, Madrid, Spain, 22-30 August, 2006
19.	HOC schemes for flows in constricted tube; with S. K. Pandit and D. C. Dalal, in the proceedings of the 50th congress of Indian society of theoretical and applied mechanics, IIT Kharagpur, India, Dec. 14-17, 2005
20.	HOC schemes for solving Navier-Stokes equations on curvilinear meshes; with S. K. Pandit and D. C. Dalal, in the proceedings of the 50th congress of Indian society of theoretical and applied mechanics, IIT Kharagpur, India, Dec. 14-17, 2005
21.	Higher order compact computation of incompressible viscous flows on nonuniform grids; with S. K. Pandit and D. C. Dalal, in the proceedings of the International congress of computational and experimental engineering, IIT Madras, India, Dec. 13-15, 2005
22.	Stream-function velocity formulation for the Navier-Stokes equations; with M M Gupta, in International symposium on computational and information sciences, at Shanghai, China, 16-18 December, 2004.
23.	Effects of Buoyancy ratio on the double diffusive natural convection in a vertical porous annulus; with Anoop K. Dass and D. C. Dalal in the proceedings of the International Symposium on Recent Trends in Heat and Mass Transfer, at Indian Institute of Technology, Guwahati, India, Jan. 6-8, 2002, edited by S. C. Misra, paper no. ISRTHMT 02-125.
24.	Simulation of flow in a differentially heated square cavity at high Rayleigh Numbers; with D. C. Dalal and Anoop K. Dass in the proceedings of the 27 th National Conference on Fluid Mechanics and Fluid Power, at Palghat, India, Dec. 11-13, 2000, edited by Konnur and Iyer, pp 229-235.
25.	An HOC approach to the steady-state natural convection in a square cavity: A numerical Approach; with D. C. Dalal in the proceedings of the International Conference on Mathematical Modelling of Non-linear Systems, at Indian Institute of Technology, Kharagpur, India, Dec. 9-11, 1999, edited by Mishra and Sinha, Vol II, pp 114-133

13. Any other Information (maximum 500 words)

- a. 8 students completed PhD under my supervision.
- b. Completed DST, India sponsored project titled: Simulation of Incompressible Viscous Flows by the Biharmonic Approach during 2008-2010.
- c. Completed SERB, DST sponsored project (under MATRICS scheme) titled: Coupled ψ - v and immersed interface method for incompressible viscous flows during 2018-2021.
- d. Reviewed research work for the following journals/ organizations:
 1. Journal of Fluid Mechanics, *Cambridge University Press*.
 2. Journal of Computational Physics, *Elsevier*.
 3. International Journal for Numerical Methods in Fluids, *John Wiley and Sons*.
 4. Numerical Methods for Partial Differential Equations, *John Wiley and Sons*.

5. Numerical heat transfer, *Taylor and Francis*.
6. Zentralblatt MATH, *European Mathematical Society*.
7. ASME Journal of Thermal Science and Engineering Applications, *The American Society of Mechanical Engineers*.
8. Physics of Fluids, *AIP Publishing*.
9. Computers and Fluids, *Elsevier*.
10. Journal of Computational and Applied Mathematics, *Elsevier*.
11. International Journal of Heat and Mass Transfer, *Elsevier*.
12. Computer Physics Communications, *Elsevier*.
13. Applied Mathematics and Computation, *Elsevier*.
14. Applied Mathematical Modelling, *Elsevier*.
15. Chemical Engineering Science, *Elsevier*.
16. Communications in Nonlinear Science and Numerical Simulation, *Elsevier*.
17. Journal of Applied Mathematics and Computing, *Springer*.
18. Mathematical Modelling and Analysis, *Taylor and Francis*.
19. Engineering Applications of Computational Fluid Mechanics, *Taylor and Francis*.
20. International Journal of Numerical Analysis and Modeling, *University of Alberta, Canada*.
21. *Georgia National Science Foundation, Georgia*.
22. Journal of Indian Institute of Science, *IISC India*.
23. *Department of Science and Technology INDIA*.