Swagata Bhaumik

Current Position:	Assistant Professor (Regular), Department of Mechanical Engineering, IIT (ISM) Dhanbad, Dhanbad – 826004, Jharkhand, India
E-Mail:	swagatameister@gmail.com, swagatabhaumik@iitism.ac.in
Phone:	0326-223-5469 (Office), +91-9149683769 (Mobile), +91-7992098957 (Mobile)
Date of Birth:	22nd December, 1978
Citizenship:	India

Official Address:	Department of Mechanical Engineering, Indian Institute of Technology (Indian School of Mines) Dhanbad, Jharkhand – 826004, India
Permanent Address:	c/o Mr. Satyabrata Bhaumik, 3/2 Joynagar 2nd lane, Agartala, Tripura(West), India, Pin-799001

Education

PhD:	Department of Aerospace Engineering, IIT Kanpur, Kanpur-208016, India. Thesis defended on 26th April, 2013. **Thesis Topic:** Direct Numerical Simulation of Inhomogeneous Transitional and Turbulent Flows. **Academic Performance:** CPI 10 out of 10 **Adviser:** Prof. Tapan K. Sengupta
M. Tech:	Department of Aerospace Engineering, IIT Kharagpur, Kharagpur-721302, India. Thesis defended on May, 2007 **Thesis Topic:** Numerical Simulation of Flow Past Two Side-by-Side Buildings. **Academic Performance:** CPI 8.76 out of 10 **Adviser:** Prof. A. Ghosh
B. E:	Department of Mechanical Engineering, Regional College of Engineering Rourkela, (Now known as National Institute of Technology, Rourkela) Orissa-769008, India, Graduated on May, 2001 **Final Year Project Title:** Investigation on Effects of Buoyancy for Flows Inside a

	Circular Annulus by Numerical Simulation **Academic Performance:** 67.5% **Advisers:** Prof. A. Sathpathy and Prof. S. K. Haldar

Areas of Specializations

- Fluid Mechanics and Aerodynamics,
- Heat Transfer,
- Stability; Transition and Turbulence of Fluid Flows,
- Aero-acoustics
- Direct Numerical Simulation (DNS) and Large Eddy Simulation (LES),
- Parallel Computing.

Current Areas of Research

- Stability and Transition of Incompressible and Compressible Fluid Flows,
- Development of High Accuracy Numerical Methods for DNS,
- Flow Control by Active and Passive Mechanisms,
- Prediction and estimation of Jet-Noise
- Proper Orthogonal Decomposition (POD) of transitional flows and reduced order modeling.

Employment Details with Research, Teaching and Industrial Experience

Sl. No.	Position	Duration	Roles and Responsibilities
1	Assistant Professor (Grade-I), Department of Mechanical Engineering, IIT (ISM) Dhanbad, Jharkhand – 826004	From 15th May, 2019 onwards	Teaching, research and other administrative work. Details of courses taught are given below.
2	Assistant Professor (Grade-I), Department of Mechanical Engineering, IIT Jammu, Jammu-181211	From 29th December, 2017 to 9th May, 2019	Teaching, research and other administrative work. Details of courses taught are given below.
3	Visiting Assistant Professor, Department of Aerospace Engineering, IIT Kanpur	From 8th July, 2017 to 20th December, 2017.	Teaching and research. Details of courses taught are given below.
4	Scientific Consultant, Department of Aerospace Engineering, IIT Kanpur	From 15th March, 2017 to 8th July, 2017	Performing Research. I was associated with a project funded by Boeing.
5	Post-Doctoral Researcher,	From January, 2014	Research to develop efficient and robust

	Department of Mechanical and Aerospace Engineering, The Ohio State University, Columbus, Ohio, USA-43210	to December, 2016	methodologies for prediction and estimation of high-speed jet-noise (Funded by Boeing and The Air-Force Research Laboratory (AFRL) under Collaborative Center for Aeronautical Sciences (CCAS) research program).
6	Senior Research Engineer, Department of Aerospace Engineering, IIT Kanpur, Kanpur-208016, India	From 15th January, 2013 to 5th January, 2014	Research on: (a) Flow control by plasma actuation (funded by ARDB), (b) Stability/transition of fluid flows, (c) Development of high accuracy numerical schemes for DNS and (d) Development of indigenous flight data recorder (FDR) (funded by HAL).
7	Senior Manager, OLCS & DCM plant, Raw Material Division, Noamundi, TATA STEEL, India	From August , 2001 to April, 2005.	Operations, maintenance planning & scheduling and monitoring and implementation of quality control, cost reduction and operational safety of the Overland Conveyor Systems (OLCS) and Dry Crushing and Material Preparation Plant (DCMP).

Courses Taught

Sl No.	Name of the Course and Course Code	Institution	Time of Teaching The Course	No of Students	Student Level
1	Advanced CFD (AE605A) (Shared with Prof. T. K. Sengupta)	IIT Kanpur	1st Semester of the Academic year 2017-2018	25	PG
2	Fundamentals of Scientific Computing (AE603A) (Shared with Prof. T. K. Sengupta)	IIT Kanpur	1st Semester of the Academic year 2017-2018	25	PG
3	Partial Differential Equations (MSO203B) (As an Independent Tutor)	IIT Kanpur	1st Semester of the Academic year 2017-2018	35	UG (2nd Year)
4	Kinematics and Dynamics of Machines (MEL111)	IIT Jammu	i) 2nd Semester of Academic Year 2017-2018 ii) 1st semester of Academic Year 2018-2019	22 - 25	UG (2nd year)
5	Solid Mechanics (AML108)	IIT Jammu	1st semester of Academic Year 2018-2019	48	UG (2nd Year)

6	Computational Fluid Dynamics (APL720)	IIT Jammu	2nd Semester of Academic Year 2018-2019	4	PG (PhD Students)
7	Engineering Mechanics (MEI101)	IIT (ISM) Dhanbad	i) 1st and 2nd semesters of Academic Year 2019-2020 ii) 1st and 2nd semesters of Academic Year 2020-2021	120	UG (1st year)
8	Research Methodology and Statistics (MEC591)	IIT (ISM) Dhanbad	1st semester of Academic Year 2019-2020	25	PG (PhD Students)
9	Fundamentals of Aerodynamics (MED539)	IIT (ISM) Dhanbad	2nd semester of Academic Year 2019-2020, 2020-2021	16	PG
10	Fluid Mechanics (MEC202)	IIT (ISM) Dhanbad	1st semester of Academic Year 2020-2021, 2020-2021	120	UG
11	Gas Dynamics (MED538)	IIT (ISM) Dhanbad	2nd semester of Academic Year 2021-2022	25	PG

Research funding from external agencies:

Sl. No.	Name of PI/Co- PI etc.	Sponsoring Authority	Title of the Project	Date of Sanction & Institute Project No.	Sanctioned amount (Rs.)
1.	Sole PI: Swagata Bhaumik	DST (SERB), Govt. India under MATRICS Scheme	Linear Spatio-Temporal Receptivity Analysis of Compressible And Mixed Convection Boundary Layer Using Bromwich Contour Integral Method	Date of Sanction: 15 Dec., 2020; Institute Project No.: DST(SERB)(264)/2020-2021/746/MECH	6,60,000/- (Six Lakhs and Sixty Thousand Rupees Only)
2.	Sole PI: Swagata Bhaumik	DST (SERB), Govt. India under CRG Scheme	Development Of Highly Accurate Immersed Interface Method For Direct Numerical Simulation Of Fluid-Structure Interaction Problems Under Compressible Flow Regime	Date of Sanction: 08 Dec., 2021; Institute Project No.: DST(SERB)(298)/2021-2022/837/MECH	24,02,400/- (Twenty Four Lakhs, Two Thousand and Four Hundred Rupees Only)
3.	PI: S. Narayanan, Co-PI: Swagata Bhaumik	DST (SERB), Govt. India under CRG Scheme	On The Reductions Of Aerofoil- Turbulence Noise Through Wavy Leading And Trailing Edge Serrations	Date of Sanction: 08 Dec., 2021; Institute Project No.: DST(SERB)(302)/2021-2022/843/MECH	34,09,961.00/- (Thirty Four Lakhs, Nine Thousand and Nine Sixty One Rupees Only)
SERB: Science and Engineering Research Board, DST: Dept. Science & Technology, Govt. India MATRICS: Mathematical Research Impact Centric Support					

CRG: Core Research Grant

Ph.D. supervision (completed/ongoing)

Name of Candidate	Registration No. with date	Status of work done
Rituparn Singh Somvanshi	Admin No. - 19DR0126; Date of PhD admission: 01/08/2019	Ongoing (Course work, Comprehensive, Research Proposal Seminar and JRF to SRF extension seminar done)
Neha	Admin No. - 19DR0071; Date of PhD admission: 01/08/2019	Ongoing (Course work, Comprehensive, Research Proposal Seminar and JRF to SRF extension seminar done)
Sawant Omkar Deepak (*)	Admin No. - 20DR0128, Date of PhD admission: 16/08/2020	Ongoing (Course work, Comprehensive, Research Proposal Seminar done)

(*) Mr. Sawant Omkar Deepak (20DR0128) has been selected as the prestigious Prime Minister's Fellowship (PMRF) for the cycle 2021-2022 based on our mutually agreed research ideas.

List of Publications (Papers Published in International Journals)

1) Nonlinear and nonparallel receptivity of zero-pressure gradient boundary layer, T. K. Sengupta, S. Bhaumik, V. Singh, and S. Shukl, International Journal of Emerging Multidisciplinary Fluid Sciences, Vol. 1(1), 19–35, 2009.
2) Further improvement and analysis of CCD scheme: Dissipation discretization and de-aliasing properties, T. K. Sengupta, V. V. S. N. Vijay and S. Bhaumik, Journal of Computational Physics, Vol. 228(17), 6150–6168, 2009.
3) A new compact difference scheme for second derivative in non-uniform grid expressed in self-adjoint form, T. K. Sengupta, S. Bhaumik and S. Usman, Journal of Computational Physics, Vol. 230(5), 1822–1848, 2011.
4) Linear spatial stability analysis of mixed convection boundary layer over a heated plate, T. K. Sengupta, S. Unnikrishnnan, S. Bhaumik, P. Singh and S. Usman, Prog. Applied Maths., Vol. 1(1), 1–23 (2011).
5) Onset of Turbulence from the Receptivity Stage of Fluid Flows, T. K. Sengupta and S. Bhaumik, Physical Review Letters, 154501, 1–5 (2011).
6) Solution of Linearized Rotating Shallow Water Equations by Compact Schemes with Different Grid-Staggering Strategies, Manoj K. Rajpoot, Swagata Bhaumik and T. K. Sengupta, Journal of Computational Physics, vol. 231(5), 2300- 2327 (2012).
7) Direct Numerical Simulation of Two-Dimensional Wall-Bounded Turbulent Flows From Receptivity Stage, Tapan K. Sengupta, Swagata Bhaumik and Yogesh Bhumkar, Physical Review E, vol. 85(2), 026308, (2012).
8) Wave Properties of Fourth-Order Fully Implicit Runge-Kutta Time Integration Schemes, S.

Bhaumik, S. Sengupta and A. Sengupta, Computers and Fluids, 81, 110–121, (2013).

9) Direct Numerical Simulation of Transitional Mixed Convection Flows: Viscous and Inviscid Instability Mechanisms, T. K. Sengupta, S. Bhaumik and R. Bose, Phys. Fluids, 25, 094102, (2013).
10) Diffusion in inhomogeneous flows: Unique equilibrium state in an internal flow, T. K. Sengupta, H. Singh, S. Bhaumik and R. Roy Chowdhury, Comp. Fluids, 88, 440–451, (2013), DOI: 10.1016/j.compfluid.2013.10.005.
11) Precursor of transition to turbulence: spatiotemporal wave front, Swagata Bhaumik and Tapan K Sengupta, Phys. Rev. E, 89, 043018, (2014).
12) A new velocity-vorticity formulation for direct numerical simulation of 3D transitional and turbulent flows, Swagata Bhaumik, Tapan K. Sengupta, Journal of Computational Physics, 284, 230–260, (2015).
13) Receptivity to harmonic excitation following non-impulsive start for boundary layer flows, Swagata Bhaumik, Tapan K. Sengupta and Zulqarnain Akbar Shabab, AIAA J., 55(10) , 3233-3238, (2017).
14) Impulse response and spatio-temporal wave-packets: The common feature of rogue waves, tsunami and transition to turbulence, Swagata Bhaumik and Tapan K. Sengupta, Phys. Fluids, 29, 124103, (2017).
15) Multiple hopf bifurcations and flow dynamics inside a 2D singular lid driven cavity - Lucas Lestandi, Swagata Bhaumik, G.R.K.C. Avatar, Mejdi Azaiez, Tapan K. Sengupta, Computers and Fluids, vol. 166, 86-103 (2018).
16) POD applied to numerical study of unsteady flow inside lid-driven cavity, Lucas Lestandi, Swagata Bhaumik, Tapan K Sengupta, G.R. Krishna Chand Avatar, Mejdi Azaiez, J. Math. Study, 51(2), 150-176 (2018).
17) An Enstrophy-Based Linear and Nonlinear Receptivity Theory" Aditi Sengupta, V Suman, Tapan Sengupta, and Swagata Bhaumik, Phys. of Fluids, 30, 054106 (2018).
18) Verification and Application of a Mean Flow Perturbation Method for Jet Noise, Swagata Bhaumik, S. Unnikrishnan, Datta Gaitonde, Aniruddha Sinha, Hao Shen, Aerospace Science and Technology, 80, 520-540 (2018).
19) Three-dimensional transition of zero-pressure-gradient boundary layer by impulsively and nonimpulsively started harmonic wall excitation, Pushpender Sharma, Tapan K. Sengupta, and Swagata Bhaumik, Phys. Rev. E 98, 053106 (2018).
20) The three-dimensional impulse response of a boundary layer to different types of wall excitation, Prasannabalaji Sundaram, Tapan K. Sengupta, and Swagata Bhaumik, Phys. Fluids 30, 124103 (2018).
21) Grid sensitivity and role of error in computing lid driven cavity problem, V. K. Suman, Siva Viknesh S., Mohit K. Tekriwal, Tapan K. Sengupta and Swagata Bhaumik, Phys. Rev. E, vol. 99, 013305 (2019).
22) A High Accuracy Preserving Parallel Algorithm for Compact Schemes for DNS, T. K. Sengupta, Prasannabalaji Sundaram, V. K. Suman and Swagata Bhaumik, *ACM Transactions on Parallel Computing*, Vol-7, Article No-21, 2020.
23) Dispersion Analysis Of Numerical Schemes Using 2D Compressible Linearized Navier-Stokes Equation for Direct Numerical Simulation, Sawant Omkar Deepak, Chandan Kumar Bhardwaj, and Swagata Bhaumik, *Computers and Fluids* 265 (2023) 106010”

24) Effects of bulk viscosity, heat capacity ratio, and Prandtl number on the dispersion relationship of compressible flows, Swagata Bhaumik, and Sawant Omkar Deepak, *Physics of Fluids* 35, 116116 (2023).
25) Linear stability analysis of compressible boundary layer over an insulated wall using compound matrix method: Existence of multiple unstable modes for Mach number beyond 3, Neha Chaturvedi, Swagata Bhaumik, Rituparn Somvanshi, *Physics of Fluids* 36, 084114 (2024) https://doi.org/10.1063/5.0219394.

Books Authored

DNS of Wall-Bounded Turbulent Flows - A First Principle Approach, Tapan K. Sengupta and Swagata Bhaumik, published by Springer Nature, Singapore (152 Beach Road, #21-01/04 Gateway East, Singapore-189721). This is a research monograph intended for graduate students, scientists and researchers working in the areas of fluid flow transition and turbulence.

Papers Presented in National Conferences

1) Onset of turbulence via deterministic route T. K. Sengupta and S. Bhaumik. CTFD Div., NAL Bangalore, 3rd October, 2011. (Same talk was also presented at IIT Bombay on 7th October, 2011).
2) Instabilities in mixed convection flows and their computations: Revisiting Rayleigh and FjΦrtoft's theorems, Tapan K. Sengupta, Swagata Bhaumik and Rikhi Bose, 2ndNational Conference on Advances in Heat Transfer and Fluid Dynamics at Aligarh Muslim University, Aligarh on March 23-24, 2013.

Papers Presented in International Conferences

1) Receptivity analysis of mixed convection flow past a horizontal plate: Direct simulation, S. Usman, V. Suman, S. Bhaumik and T. K. Sengupta, 7th Int. Conf. on Heat Transfer, Fluid Mechanics and Thermodynamics, 19-21 July 2010, Antalya, Turkey.
2) Comparative studies of mixed convection flow instabilities past vertical and horizontal plate, T. K. Sengupta, S. Usman, V. Suman and S. Bhaumik, 7th Int. Conf. on Heat Transfer, Fluid Mechanics and Thermodynamics, 19-21 July 2010, Antalya, Turkey.
3) DNS, LES and High accuracy computing, T. K. Sengupta, S. Bhaumik and Y. G. Bhumkar, 1st Int. Conf. On Metacomputing (IcoMec10), December 16-17, 2010, Goa, India.
4) Nonlinear receptivity and instability studies by POD, T. K. Sengupta, S. Bhaumik and Y. G. Bhumkar, AIAA-2011-3293, 6th AIAA Theoretical Fluid Mechanics Conf., Honolulu, Hawaii, USA, 27-30 June 2011.
5) On the divergence-free condition of velocity in two-dimensional velocity-vorticity formulation of incompressible Navier-Stokes equation, Swagata Bhaumik and T. K. Sengupta, AIAA-2011-3238, 20th AIAA CFD Conf., 27-30 June, 2011, Honolulu, Hawaii, USA. (2011).

6) Direct numerical simulation in CFD: Now or never, Tapan K. Sengupta, Swagata Bhaumik and Yogesh Bhumkar, Int. Conf. On Metacomputing (IcoMec11), at National Institute of Oceanography, Dona Paula, Goa on December 2011.
7) Time integration for DNS of transitional and turbulent flows: Critical evaluation of IMEX method, Tapan K. Sengupta, Swagata Bhaumik, M. Sriramkrishnan and V. K. Sathyanarayanan, International Conference on Progress in Fluid Dynam- ics and Simulation, October 25-27, 2014, Mathematics Research Center, National Taiwan University, Taiwan.
8) A Navier-Stokes-Based Approach for Mean Flow Perturbation Analysis, Swagata Bhaumik, Datta Gaitonde, Mbu Waindim, 67th Annual Meeting of the APS Divison of Fluid Dynamics, November 23 - 25, San Francisco, USA (Proceedings published in J. Bulletin of the American Physical Society, Vol 59, 2014, Publisher- American Physical Society).
9) Role of Spatio-Temporal Wave-front in causing Flow Transition, Swagata Bhaumik and Tapan K. Sengupta, 67th Annual Meeting of the APS Divison of Fluid Dynamics, November 23 - 25, San Francisco, USA (Proceedings published in J. Bulletin of the American Physical Society, Vol 59, 2014, Publisher-American Phys- ical Society).
10) Different Routes of Transition by Spatio-Temporal Wave-Front, Swagata Bhaumik, Tapan K. Sengupta and V. Mudkavi, IUTAM Symposium on Advances in Computation, Modeling and Control of Transitional and Turbulent Flows, 15-18 December, 2014, Goa, India.
11) DNS of Incompressible Square Duct Flow and its Receptivity, M. Sriramkrishnan, Tapan K. Sengupta and Swagata Bhaumik, IUTAM Symposium on Advances in Computation, Modeling and Control of Transitional and Turbulent Flows, 15-18 December, 2014, Goa, India.
12) Frequency dependent capacitance SDBD plasma model for flow control, S. Ghosh, P. M. Bagade, T. K. Sengupta, S. Bhaumik, S. Sengupta and H. D. Vo, IUTAM Symposium on Advances in Computation, Modeling and Control of Transitional and Turbulent Flows, 15-18 December, 2014, Goa, India.
13) Effects of Free-stream turbulence in a square duct flow, P. M. Bagade, S. Bhau- mik, M. Sriramkrishnan and T. K. Sengupta, IUTAM Symposium on Advances in Computation, Modeling and Control of Transitional and Turbulent Flows, 15-18 December, 2014, Goa, India.
14) From Tsunami to Turbulence: Link Revealed by Theory and High Performance Computing, T. K. Sengupta and S. Bhaumik, 6th ICTACEM, December 29-31, 2014, IIT Kharagpur, India.
15) Development of a Navier-Stokes-Based Numerical Method for Basic State Pertur- bation Analysis, Swagata Bhaumik, Datta V. Gaitonde and and Mbu Waindim, 53rd AIAA Aerospace Sciences Meeting, AIAA SciTech 2015, January 4 - 9, 2015, Orlando, Florida, USA. DOI: doi:10.2514/6.2015-1533.
16) Investigation of a Twinjet Configuration with and without Flow Control, Kalyan Goparaju, Datta V. Gaitonde and Swagata Bhaumik, 54th AIAA Aerospace Sciences Meeting, AIAA Aviation 2015, June 22 - 26, 2015, Dallas, Texas, USA.
17) Mean Flow Perturbation Analysis of Under-expanded Jet, Swagata Bhaumik, Datta Gaitonde and Hao Shen, 68th Annual Meeting of the APS Division of Fluid Dynamics, 60(21), Boston, Massachusetts, 2015.
18) Analysis of the Near-field of a Twinjet Configuration, Kalyan Goparaju, Datta Gaitonde, Swagata Bhaumik, 54th AIAA Aerospace Sciences Meeting, AIAA Science and Technology Forum and

Exposition 2016.

19) Further Development of the Navier-Stokes Equations-Based Mean Flow Perturbation Technique, Mbu Waindim, Swagata Bhaumik, Datta Gaitonde, 54th AIAA Aerospace Sciences Meeting, AIAA Science and Technology Forum and Exposition 2016.
20) Application of Navier-Stokes based Mean-Flow Perturbation Method to Supersonic Jet Noise, S. Bhaumik, D. V. Gaitonde K. Goparaju, S. Unnikrishnan and M. Waindim, In 46th AIAA Fluid Dynamics Conference (p. 4092), 2016.
21) Physics of Twinjet Plume Interactions, K. Goparaju, D. V. Gaitonde, S. Bhaumik and D. J. Garmann, In 54th AIAA Aerospace Sciences Meeting, Chicago (p. 1109), 2016.
22) Investigation of the Plume Dynamics and the Near-field of a Supersonic Twinjet, Kalyan Goparaju, Datta V. Gaitonde, Swagata Bhaumik and Daniel J. Garmann, In 46th AIAA Fluid Dynamics Conference, (p. 4256), 2016.
23) Direct Numerical Simulation from First Principle of Transition for Zero-Pressure Gradient Boundary Layer: Spatio-Temporal Wave-Front, Swagata Bhaumik, Talk presented at First Indo-French Research Workshop held at IIT Indore, Simrol, India, from 29th-31st August, 2018.
24) Verification and Application of a Mean Flow Perturbation Method for Jet Noise, Swagata Bhaumik, D. Gaitonde, Unnikrishnan Nair, AA2/07, Paper Presented in WESPAC (Western Pacific Commission for Acoustics) meeting titled "Acoustical Science and Technology for Quality of Life" held at CSIR-National Physical Laboratory (CSIR-NPL), New Delhi-110012, from 11-15 November, 2018.
25) "Vortex induced vibration of a circular cylinder under compressible flow regime", by Swant Omkar Deepak and Swagata Bhaumik, paper presented in 9th International and 49th National Conference on Fluid Mechanics and Fluid Power (FMFP) December 14-16, 2022, IIT Roorkee, Roorkee-247667, Uttarakhand, India
26) Deepak, S.O., Bhardwaj, C.K., Sharma, S. and Bhaumik, S., Effect of reduced mass on two-dimensional compressible flow past circular cylinder, 9th International and 49th National Conference on Fluid Mechanics and Fluid Power (FMFP-2022)
27) Compound Matrix Method for Calculating Stability Of 2D and 3D Compressible Boundary Layers, Neha Chaturvedi, Rituparn Somvanshi, Swagata Bhaumik, 13th Asian Computational Fluid Dynamics Conference, Oct-16-19, 2022, South Korea
28) Compound matrix method for linear stability analysis of flow over a flat plate, Rituparn Somvanshi, Neha Chaturvedi, and Swagata Bhaumik. 49th national and 8th International Fluid Mechanics and Fluid Power Conference, Dec 12-15 2022, IIT Roorkee, India
29) Direct numerical simulation of compressible adiabatic boundary layer for supersonic flows with leading edge excitation, Rituparn Somvanshi, Neha Chaturvedi, and Swagata Bhaumik. 14th Asian Computational Fluid Dynamics Conference, Nov 1-3, 2023, HAL Bengaluru, India
30) Stability and receptivity analysis of compressible boundary layer over the isothermal flat plate, Neha Chaturvedi, Rituparn Somvanshi, Swagata Bhaumik, 50th national and 10th International Fluid Mechanics and Fluid Power Conference, Dec 20-22, 2023, IIT Jodhpur, India.

International Poster Presentation

Recent trends in HPC at HPCL, IIT Kanpur, M. K. Rajpoot, V. K. Suman, Y. G. Bhumkar, S. Bhaumik, N.

Hussian and V. V. S. N. Vijay, In: Proceedings of the Asian Technology Information Program (ATIP) Supercomputing 2009 (SC009), November 20, 2009.

Invited Talk

1. "Direct Numerical Simulation of Transitional and Turbulent Flows: Dynamics of Spatio-Temporal Wave-Front", Swagata Bhaumik, First Indo-French Research Workshop, 29-31 August, 2018 at IIT Indore, Simrol, India.
2. Delivered an online invited lecture under "Fluid Mechanics Lecture Series" on Oct 21 2020. The "Fluid Mechanics Lecture Series" is organized by the "The Mechanics Discussions" forum, an international forum of scientists and researchers working on various aspects of Continuum Mechanics. Title of the talk: "Dynamics of the spatio-temporal wave-front as unique precursor of flow transition".

Other Relevant Information

- Obtained 4th position in state level Mathematical Olympiad conducted by Tripura Mathematical Society in 1996 and subsequently represented the state in Regional Mathematical Olympiad held in 1996.

- Secured 11th position in the state level 10+2 board examination conducted by Tripura Board of Secondary Examination in 1997.

- Secured 9th position in the state level Joint Entrance Examination in the Physics-Chemistry-Mathematics group in 1997.

- Secured 7th position in Jagadish Bose National Science Talent Search Examination in the junior category in 1996.

- Obtained 99.5 percentile in GATE, 2005 in Mechanical Engineering category (ranked 111th position out of approximately 23000 students appeared in the examination).

- During my PhD at IITK, I have been research associate to two successfully completed projects whose principle project investigator was Prof. Tapan K. Sengupta. Bothe the projects were sponsored by National Aerospace Laboratories, Bangalore, India. These projects are:
  - A transition prediction model for periodic vortex induced instability. Completed in July, 2010.
  - A study of induced instability by a vortex system trailing behind a lifting surface. Completed in December, 2011.

- I was awarded travel grant allowance from Department of Science and Technology (DST), Govt. of India and Council for Scientific and Industrial Research (CSIR) for attending international conferences abroad in 2011 and 2012 during my PhD.

- I have participated in the workshop Instabilities of Flows with and without Heat Transfer and

Chemical Reaction held at International Center for Mechanical Sciences (CISM), Udine - 33100, Italy from June 9 to 13, 2008.

- I have given three lectures in the quality improvement program (QIP) organized by Prof. Tapan K. Sengupta at IIT Kanpur for lecturers in various engineering colleges in India. The topics of the lectures are:
  1. Role of solenoidality error in velocity-vorticity formulation of incompressible Navier-Stokes equation.
  2. Nonlinear and nonparallel receptivity of the boundary layer.
  3. Overset and chimera grid technique.

- Some of the results produced by me in the area of instability and transition have been included in the book titled *Instabilities of Flows and Transition to Turbulence*, CRC Press, Taylor & Francis Group, Florida, USA, 2012 authored by Prof. Tapan K. Sengupta.

- I was one of the member of the national organizing committee of IUTAM Symposium Advances in Computation, Modeling and Control of Transitional and Turbulent Flows held from 15^{th} to 18^{th} December, 2014 in Goa.

- I am member of the following professional societies:
  - American Institute of Aeronautics and Astronautics (AIAA)
  - American Physical Society (APS)

- I have reviewed several articles for the following international journals and conference proceedings.
  1. Physics of Fluids (AIP Publishing),
  2. Computers and Fluid (Elsevier),
  3. Applied Mathematics and Computation (Elsevier),
  4. Frontiers in Aerospace Engineering,
  5. International Journal of Aeroacoustics (SAGE Journals)
  6. AIAA Journal (AIAA),
  7. ASME Conference Proceedings,
  8. IUTAM Symposium.

- I was selected for the position of Assistant Professor (On Contract) in the School of Engineering Sciences, IIT Mandi in January, 2014.

- At IIT Jammu, I was coordinating the effort for the procurement and installation of 230 TFLOPS HPC system along with being part of other PFC committees. I was also leading the effort to set up the Kinematics and Dynamics Laboratory in the Department of Mechanical Engineering for UG teaching.

Hobbies and Other Activities

- I am very passionate about exploring new places, know new people, and learn about their cultures, customs and socio-political history.
- In IITK, during my PhD days as well as during my Post-Doctoral stint at OSU, I used to regularly participate in various discussions, invited talks by eminent personalities particularly on topics like ancient and contemporary world-history, literature, politics and socio-economic conditions and its impact on current conflicts occurring around the globe.
- Similarly, reading various books/news-items/monographs/research articles or listening to various online lectures, discussions or debates particularly focused on current-affairs, politics, history etc. has always been a passion for me.
- During my PhD days at IITK, I have participated in several trekking expeditions up to several remote places like, Gangotri, Kedernath, Badrinath etc.
- In OSU, I have actively participated in the annual "Global Glance Program" which provides an excellent forum to international scholars from various countries/nationalities to share and present their home countries and their local cultures to students, faculty and staff.

Other Administrative Activities

1. Member of the HPC procurement committee member at IIT Jammu
2. Dept. Time-table in-charge from 2020 to till date
3. DFSC member from 2019-2021
4. Committee member for preparing documents for NBA (Dept. Level) in 2020
5. Scrutiny committee member for PhD admission in 2019
6. Scrutiny committee member for M.Tech. admission in 2020
7. Scrutiny committee member for UG admission in 2019
8. Heat-transfer lab in-charge since 2020
9. Scrutiny committee member for JTA applications in 2019
10. Stock register verification committee member in 2019, 2020 and 2021
11. Organization of 3 weeks institute level workshop on Fluidyn from 24 May 2021 to 12th June 2021.