Dr. Ashish Saxena   **Male**
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Google Scholar: https://scholar.google.co.in/citations?user=HabPoCkAAAAJ&hl=en

Education Qualification

- PhD Thesis Title:- ***Analysis of Natural Convection in Open Cavities***
  Indian Institute of Technology Bombay

  Jul'14 – Jan'20
  Supervisor: Prof. Suneet Singh
  Co-Supervisor: Prof. Atul Srivastava

- M.Sc. Project Title:- ***Numerical analysis of Radiative and Convective heat transfer (losses) in different shapes of cavity receivers***
  Indian Institute of Technology Bombay

  Jul'12 – Jun'2014
  Supervisor: Prof. Suneet Singh
  Co-Supervisor: Prof. Atul Srivastava

Post PhD Work Experience

- Post-Doctoral Research Associate
  University of Sheffield, Sheffield, United Kingdom

  Oct'20 – Present
  Supervisor: Prof. Shuisheng He

- Research Associate
  Indian Institute of Technology Bombay, Mumbai, India

  Jan'20 – Jun'20
  Supervisor: Prof. Suneet Singh

Publications

1. **Ashish Saxena**, Suneet Singh, and Atul Srivastava., "Comparison of local heat transfer distribution in between three dimensional inclined closed and open cavities", **Journal of Heat Transfer**, 142 (3), 032601, 2020 **(I.F 1.479).**

2. **Ashish Saxena**, Atul Srivastava and Suneet Singh., "Experiments on the identification of the onset of buoyancy-driven convection in high aspect ratio top open cavities" **Journal of Heat Transfer,** 142 (10), 102602,2020. **(I.F 1.479).**

3. **Ashish Saxena**, Vimal Kishor, Suneet Singh, and Atul Srivastava., "Whole field measurements to identify the critical Rayleigh number for the onset of natural convection in top open cavity", **Experimental Heat Transfer**, 33(2), 123-140, 2020 **(I.F 2.0).**

4. **Ashish Saxena**, Suneet Singh, and Atul Srivastava., "Flow and heat transfer characteristics of an open cubic cavity with different inclinations", **Physics of Fluids**, 30(8), 087101, 2018 **(I.F 2.627).**

5. **Ashish Saxena**, Vimal Kishor, Suneet Singh, and Atul Srivastava., "Experimental and numerical study on the onset of natural convection in a cavity open at the top", **Physics of Fluids**, 30(5), 057102, 2018 **(I.F 2.627).**

6. Sarath Mohan., **Ashish Saxena**, and Suneet Singh., "Heat Loss Analysis from a Trapezoidal Cavity Receiver in LFR System using Conduction-Radiation Model", **Solar Energy**, 159, 37-43, 2018 **(I.F 4.674).**

7. **Ashish Saxena**, Niyati Jhamaria, Suneet Singh, Sudhanshu Sahoo, "Numerical Analysis of Convective and Radiative heat losses from Trapezoidal Cavity Receiver in LFR Systems", **Solar Energy**, 137, 308-316, 2016 **(I.F 4.674).**

Conferences

1. **Ashish Saxena**, Suneet Singh, and Atul Srivastava., "Comparison of local heat transfer distribution between closed and open cavity for different Rayleigh number and inclination angles", 71st Annual Meeting of the APS Division of Fluid Dynamics, November 18-20, 2018; **Atlanta, Georgia, USA.**

2. Suneet Singh, **Ashish Saxena**, Abhinav Gairola, and Hitesh Bindra., "POD-ROM model for analyzing the onset of natural convection and stability in a differentially heated top open cavity", 71st Annual Meeting of the APS Division of Fluid Dynamics, November 18-20, 2018; Atlanta, Georgia, USA.

3. **Ashish Saxena** and Suneet Singh, " Effect of External Heat Transfer and Thermal Boundary Conditions in Rigid-Free Top Facing Cavity**"** 24th National and 2nd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2017), December 27-30, 2017, BITS Pilani, Hyderabad, India.

4. **Ashish Saxena** and Suneet Singh., "Numerical Investigation on the Onset of Natural Convection in a Finite Sized Cavity with Rigid-Free Surface" 6th International 43rd National Conference on Fluid Mechanics and Fluid Power (FMFP-2016). December 15-17, 2016, Allahabad, Uttar Pradesh, India.

5. **Ashish Saxena** and Suneet Singh, 2015, "Analysis of the Radiative and Convective heat losses from a Two Dimensional Open Square Cavity" 23rd National Heat and Mass Transfer Conference and 1st International ISHMT-ASTFE Heat and Mass Transfer Conference IHMTC2015, December 17-20, 2015, Thiruvananthapuram, India

Awards and Honors

2018

- **Bhaskara Advanced Solar Energy (BASE)** internship Program sponsored by the **Department of Science and Technology,** Govt. of India and the **Indo-U.S. Science and Technology** Forum

- Awarded grant to visit 71st **American Physical Society-Division of Fluid Dynamics (APS-DFD)**, Atlanta, Georgia, USA, by IIT Bombay, India *2018*

- Secured All India rank **47th** in Joint Admission Test for M.Sc. in **mathematics** stream funded by the MHRD *2012*

Research Interest

- Fluid Flow and Heat Transfer
- Conductive Convective and Radiative Heat Transfer
- Thermographic PIV
- Laser-based Mach-Zehnder Interferometry
- Large Eddy Simulation (LES)
- Thermal Stratification

- Computational Fluid Dynamics
- Onset of Rayleigh-Benard Convection
- Particle Image Velocimetry (PIV)/ Laser-Induced Phosphorescence (LIP)
- Turbulence Modelling (RANS model)
- Direct Numerical Simulation (DNS)
- Thermal Mixing

Technical Proficiency

- Programming   C, C++, Python
- Tools   LaTeX, MS Office, Origin
- Simulations   ANSYS, COMSOL MULTIPHYSICS, MATLAB
- Modelling   Design Builder, SolidWorks
- Open source software   OpenFOAM, Code-Saturne, Salome
- Experimental   Knowledge of various experiments techniques related to fluid flow analysis based on Mach-Zehnder Interferometry and Particle Image Velocimetry technique

Academics Projects

Computational analysis of thermal stratification in horizontal solar thermal receivers with liquid metal coolants
  Guide: Prof. Hitesh Bindra, Mechanical & Nuclear Engineering Department, Kansas State University, USA. (3-months project) *May'18 – Aug'18*
- The analysis based on the thermal stratification in liquid metal (liquid sodium) pools
- Performed, simulations for channel flow using LES (Large Eddy simulation) with liquid metal fluid to validate the numerical methodology of the pipe flow
- Results are presented in form of the thermal eddy diffusivity and mixing efficiency for different cases of the flow rates

Numerical investigation on the behaviour of fluidized bed with different system parameters *Jul'14 – Dec'14*
  Guide: Prof. Manaswita Bose, Energy Science and Engineering Dept., IIT Bombay.
- Undertook an **exhaustive literature review** on characteristics of fluidized beds and on mechanism of coal combustion
- Numerical analysis using the **ANSYS Post Processing** software has been carried out and discussed the hydrodynamics behaviour of the bed with different system parameters.

Energy Management Project: Energy audit of Pulp and Paper Industry, Pune, India   *Jan'13– Apr'13*

Guide: Prof. Rangan Banerjee, Energy Science and Engineering Dept., IIT Bombay

- Studied energy consumption patterns of plant and identified most energy-saving areas on the basis of economic feasibility.
- Discussed the energy calculation for a different component of the plant using the energy flow diagram (Sankey diagram) has been discussed.

Study of Hydraulics Jumps: Experimental study of Hydraulics jump in a channel   *Jul'13 – Dec'13*

Guide: Prof. Manaswita Bose, Energy Science and Engineering Dept., IIT Bombay

- Studied the appropriate parameters an open channel to determine the possibility of the hydraulic jump occurring.
- Studied the energy loss in upstream and downstream due to the hydraulics jump.

Position of Responsibility

Jul'14–Jun'18

Teaching Assistant | Transport Phenomena, Nuclear Reactor Theory, Energy Systems Modelling and Analysis, Power Generation, IIT Bombay

- Lead a group of 3 Teaching Assistants to aide Professor in undertaking a course having **100**+ undergraduate/Post-graduate/P.HD students.

FMFP (The National Society for Fluid Mechanics and Fluid Power) Coordinator | VMCC, IIT Bombay   *Dec-2018*

- Coordinator for Fluid Mechanics and Fluid Power conference organized by Department of Mechanical Engineering, IIT Bombay (Dec-2018).

ICAER (International Conference on Advances in Energy Research) Coordinator | VMCC, IIT Bombay   *Dec-2017*

- Coordinator for 6th International Conference on Advances in Energy Research organized by Department of Energy Science and Engineering, IIT Bombay (Dec-2017).

Key Elective Courses

- **Computational Fluid Dynamics and Heat Transfer**
- **Fluid Mechanics**
- **Advanced Heat Transfer**
- **Solar Photovoltaic, Fundamentals, Technologies and Applications**
- **Mathematical Methods in Engineering**
- **Non-conventional Energy Systems Lab**
- **Thermodynamics and Energy Conversion**

- **Energy Management**
- **Introduction to Renewable Energy Technologies**
- **Energy Systems Modelling Analysis**
- **Utilisation of Solar Thermal Energy**
- **Energy Resources, Economics and Environment**
- **Nuclear Reactor Theory**
- **Mathematical Foundation for Energy Science**

Declaration

- I, **Ashish Saxena**, hereby declare that the above information is true to my knowledge as of March 16, 2022.