INDIAN INSTITUTE OF TECHNOLOGY KANPUR

DEPARTMEMENT OF AEROSPACE ENGINEERING

PLACEMENT BROCHURE
2023-2024

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Welcome Address

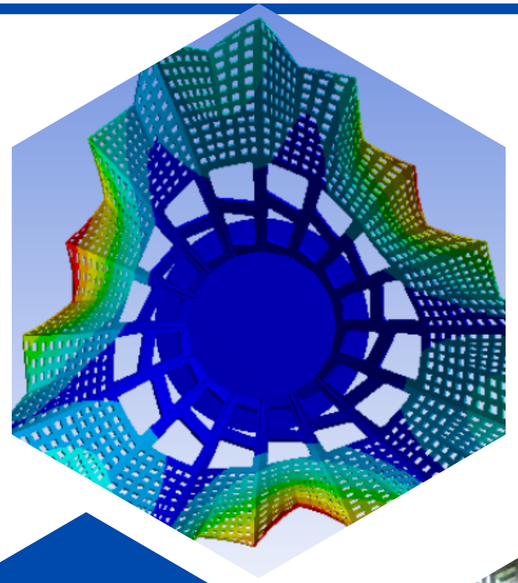
The Aerospace Engineering Department, with a history of over 40 years, was formerly known as the Aeronautical Engineering Department until 1991. The department maintains a balance between hardware development and theoretical/computational aspects in teaching, research, and development. Currently, the faculty consists of 31 members, sharing four with the Sustainable Energy Engineering Department. The department has undertaken numerous research projects funded by agencies such as Aeronautics R&D Board, ISRO, ADA, DST, HAL, DMRC, NAL, IFCPAR, TERI, PCRA, and DRDO. Faculty contributions span areas like wind tunnels, flow measurements, CFD, aerodynamics, satellite dynamics, thermal rocket propulsion, structural dynamics, composite structures, smart structures, aeroelasticity, wind turbines, and advanced materials modeling.

Dr. G.M. KAMATH

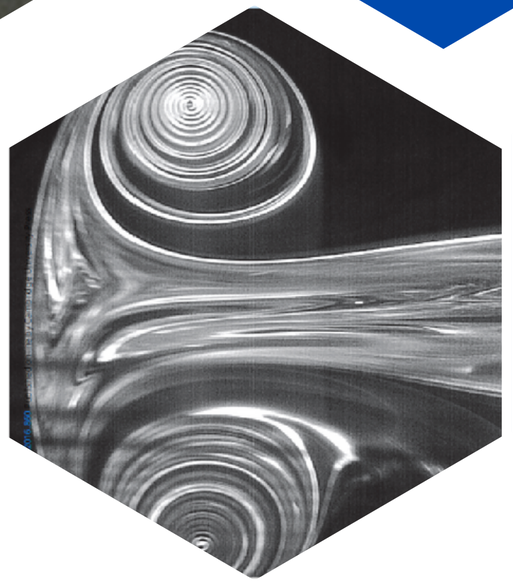
About Department

Established in 1964, the department of Aerospace Engineering at IITK is one of the prominent centres for advanced flight research

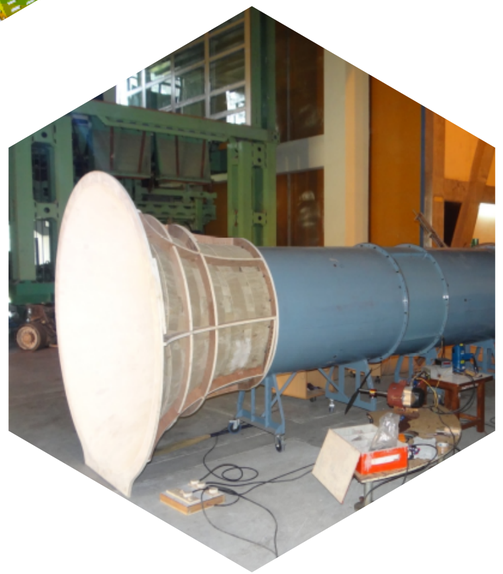
The department houses one-of-a-kind Flight Lab with three single engine airplanes, a motored glider and a 1000 m runway.



The department specializes in Aerodynamics, Flight Mechanics, Propulsion and Aerospace Structures.



The National Wind Tunnel Facility is one the few facilities available for public and private enterprises to test and correlate their results.



Academic Curriculum

B.Tech

Over four years, this education program aims to teach young students the core of professional engineering and involves a two-semester project in the final year.

M.Tech

This four-semester program provides graduates with a synergetic combination of industry oriented course work and research.

M.S(R)

A postgraduate research program spanning 2-3 years, cultivating students for rigorous roles in industry and academia, exploring contemporary domains.

P.H.D

A rigorous research program with a duration of 4-5 years. It establishes a candidate's ability to pursue independent research and a career in industry/ research labs.

LABORATORIES

RESEARCH LABORATORIES & NATIONAL FACILITIES

- Advanced Propulsion Lab
- Advanced Combustion and Acoustics Lab
- Autonomous Helicopter Facility
- Computational Fluid Dynamics Lab
- Unsteady Aerodynamics Lab
- Flame and Combustion Dynamics Lab
- High Performance Computing Lab
- Hypersonic Experimental Aerodynamics Lab
- Virtual Instrumentation Lab
- Structures, Structural Analysis Lab
- NWTF, ACECOST
- Computational Propulsion Lab
- Combustion Lab
- Fluid dynamics Lab
- Flight Lab
- Structures and Material Characterization Lab
- Unmanned and Micro-aerial Vehicle Lab

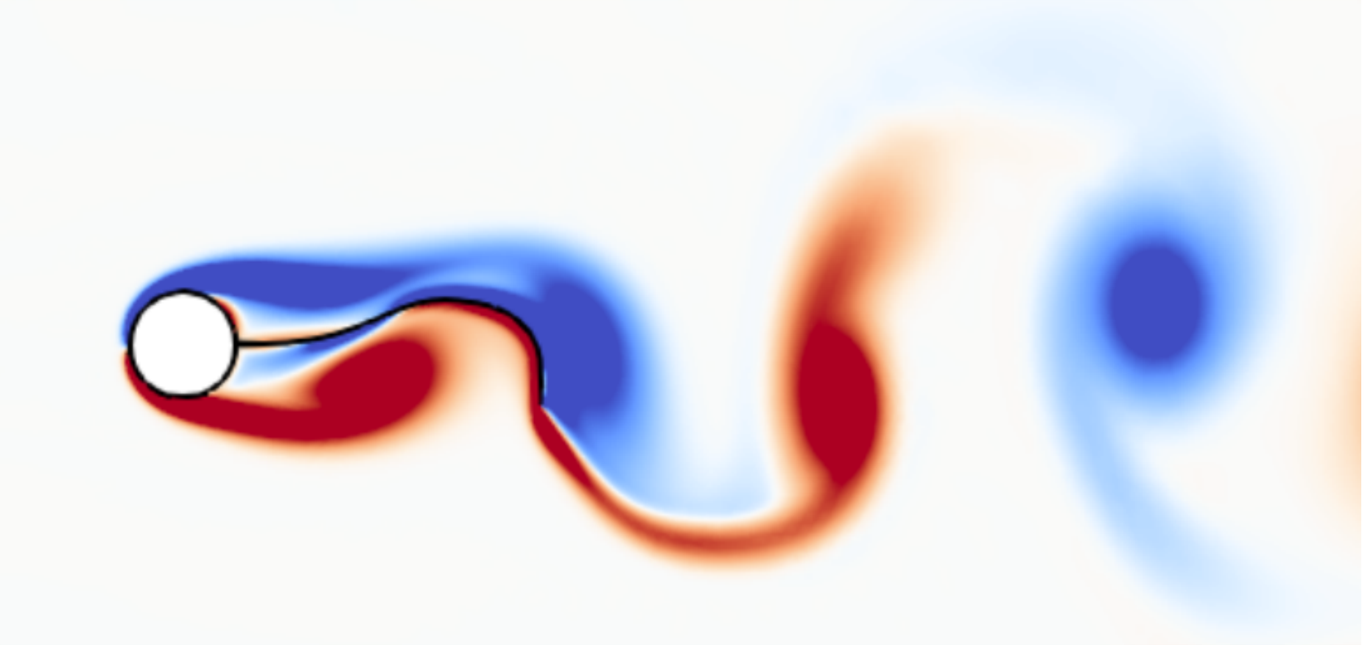
UG LABORATORIES

- Low-Speed Aerodynamics Laboratory
- High-Speed Aerodynamics Laboratory
- Flight Laboratory
- Structures Laboratory
- Aero-modeling Laboratory
- Design Laboratory

RESEARCH AREAS

AERODYNAMICS

- Transition and Turbulence, CFO, Aerodynamics.
- Fluid Mechanics, Gas Dynamics
- Experimental Techniques in Fluid Mechanics.
- Turbulence, Low and High Speed Flows.
- FEM, Shape Optimization, Bluff Body Flows.
- Theoretical and Experimental Fluid Dynamics
- UAVs, Instability and Transition, Aero-acoustics.
- Hypersonics, Rarefied Gas Dynamics
- Microfluidics, Heat Transfer & TPS Design.
- Experimental Aerodynamics
- Flow Instability and Transition
- Turbulent Shear Flows.



RESEARCH AREAS

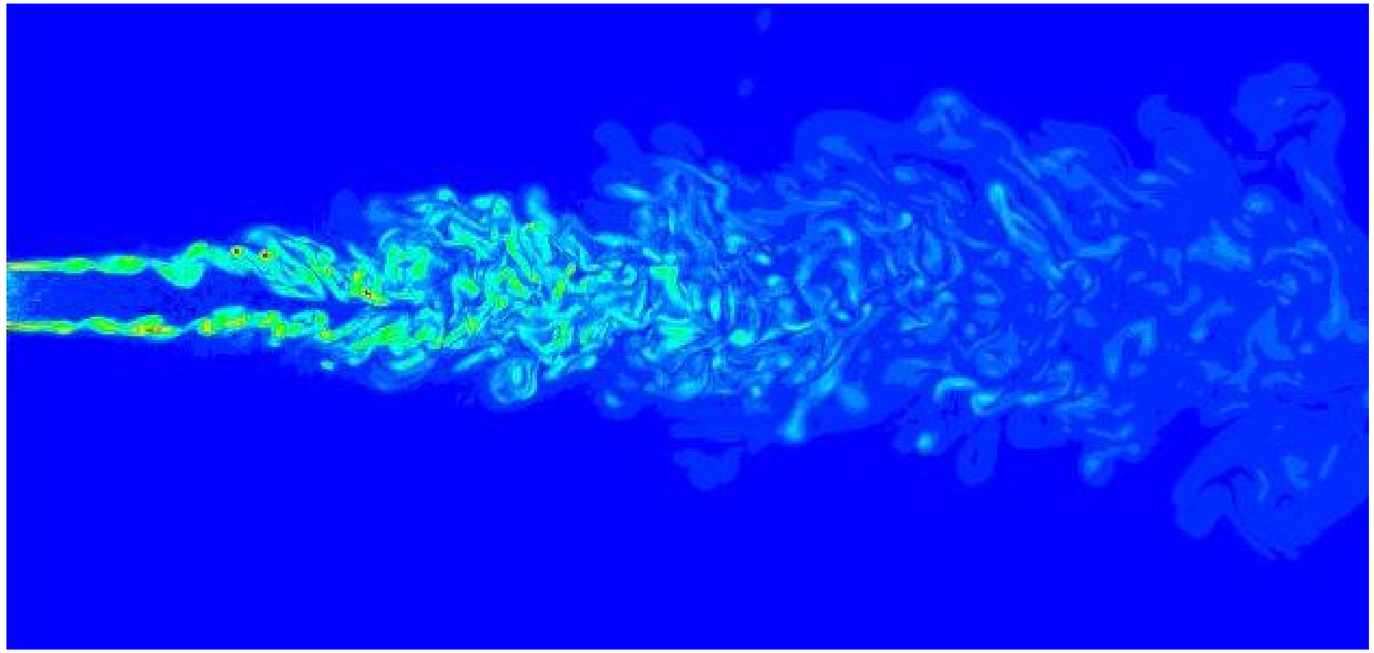
FLIGHT MECHANICS AND CONTROL

- Flight Mechanics, Control, Aeroservoelasticity
- Unsteady Aerodynamics, Space Dynamics.
- Parameter Estimation from Flight Data
- Neural modeling, Missile Guidance.
- Optimal Control, Nonlinear and Adaptive Control
- Flight Vehicle Guidance and Control
- State Estimation, Motion Planning and Cooperative Control.

RESEARCH AREAS

PROPULSION

- CFO of Chemically Reacting Flows
- Heat Transfer
- Liquid Atomization, Combustion
- Flow Control, Turbomachinery
- Electric Propulsion, Turbulent Combustion
- Turbulent Flows in Gas Turbines, Hydrogen Combustion
- Thermoacoustic Interactions
- Optical Flow Diagnostics, Acoustic Measurements
- Combustion, Heat Transfer, Fluid Mechanics
- Experimental Methods, Computational Fluid Dynamics

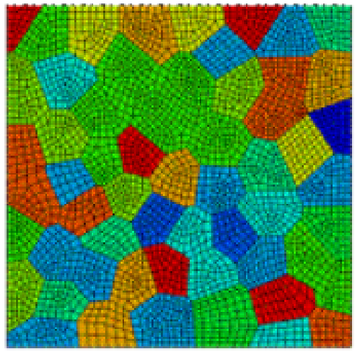


RESEARCH AREAS

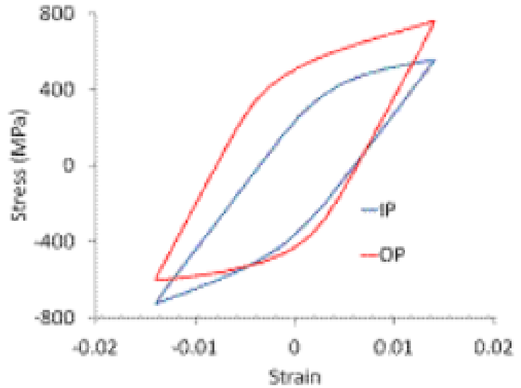
Structures, Structural Dynamics & Aeroelasticity

- Helicopter Dynamics, Aeroelasticity
- Autonomous helicopter.
- Experimental Stress Analysis Smart Materials.
- Solid Mechanics, Adaptive Finite Element Methods
- Structural Optimization, Damage Mechanics
- Composites, Finite Element Analysis
- Solid Mechanics, Fracture Mechanics
- Experimental Stress Analysis, Optical Metrology.
- Rotary Wing Aeromechanics, Autonomous MAV/UAVs
- Wind Turbines, Systems and Design

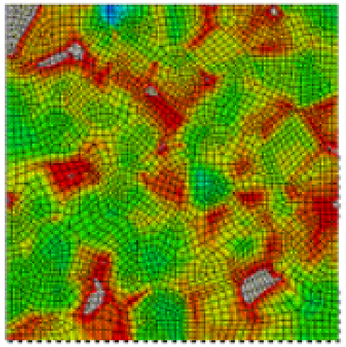
Thermo-mechanical fatigue analysis at polycrystalline length-scale



Microstructure



Hysteresis



Stress Distribution

Ref: Reserach from Dr Pritam Chakraborty

RESEARCH AREAS

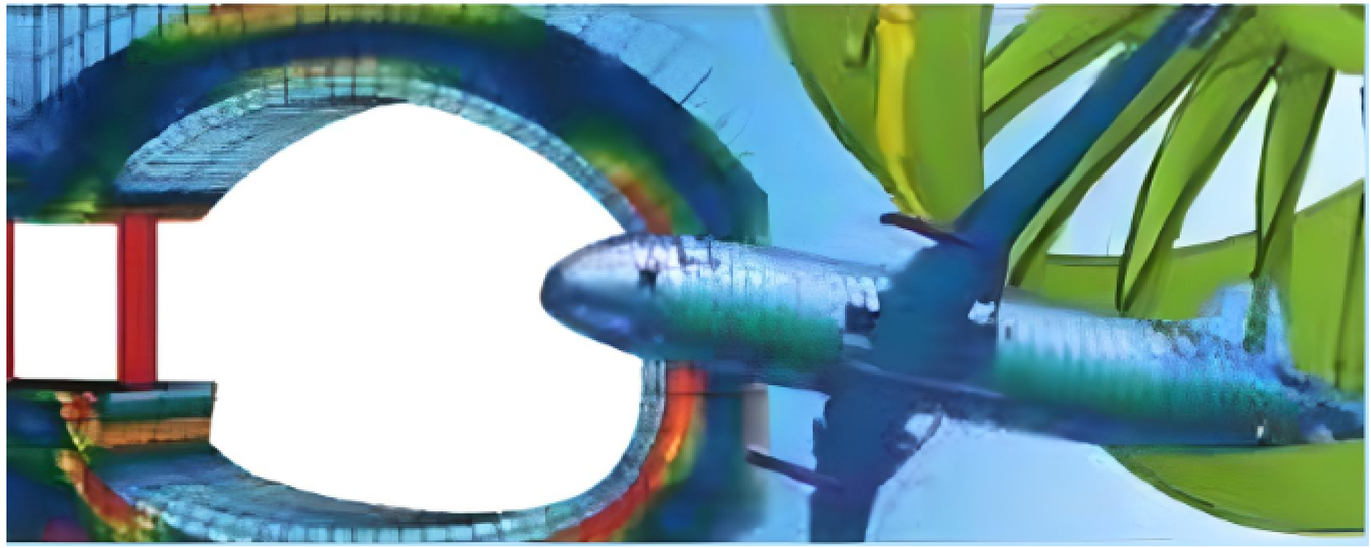
AERO-THERMODYNAMICS AND THERMAL SCIENCES

- High Speed Flows
- Turbomachinery
- Acoustics and Noise
- Multiphase Flows
- Heat Transfer
- Fire Dynamics
- Detonation & Explosions

RESEARCH AREAS

COMPUTATIONAL MECHANICS

- Multiscale models of solids and fluids
- Computational material modeling
- Reduced/ lower order models of fluids problems
- Machine learning and artificial intelligence
- Metamaterials including acoustic metamaterials
- Uncertainty quantification and reliability analysis
- Optimization and inverse models
- FSI: aeroelasticity, aerothermoelasticity, flutter
- Computational fluid dynamics (CFD)
- Finite Element Method (FEM)
- Theoretical and computational aeroacoustics (CAA)
- Wave mechanics
- Composites including multi-functional composites, sandwich structures
- Plasticity, fatigue, fracture and damage of high-temperature alloys



CO-CURRICULUM ACTIVITIES

The Society of Aerospace Engineers (SAE) is the official body of the Department of Aerospace Engineering IITK.
It is a community of students, Faculty, and staff members which primarily aims at increasing the level of interaction among the members.
Academic activities like organizing industrial trips, workshops, and seminars are an integral part of the society's functioning.

SOCIETY OF AEROSPACE ENGINEERS

PAST RECRUITERS

GKN AEROSPACE

pwc

JAGUAR

TATA ADVANCED SYSTEMS

citi

NewSpace

standard chartered

Deutsche Bank

LAND ROVER

AIRBUS

ExxonMobil

EY

HSBC

GE Aviation

AMERICAN EXPRESS

Collins Aerospace

CREDIT SUISSE

ROLLS ROYCE

SOCIETE GENERALE

EATON

MathWorks®

JPMORGAN CHASE & CO.

Placement Procedure

Registration

The Office extends invitations with relevant links. Companies interested in recruitment should kindly register via the Recruitment Automation system(RAS).

Online JAF/IP

Companies need to fill out a Job Announcement Form (JAF) / Internship Proforma (IP) in the portal to share the offered profile details.

Portal Visibilty

Job/Internship openings are visible on the portal per the dates the placement team decided..

Test Procedure

Companies conduct their PPT and tests/screening process after finalizing the schedule with the placement team.

Slotting of Interview

The placement office allots dates of interviews and PoC for the interview process.

Interview Procedure

Placement interviews start on December 1st, 2023. Companies are required to submit the number of selected students to the Placement Office.

Students' Placement Office

109, Outreach Building, IIT Kanpur
Phone : +91-5122594433/34
Email: spo@iitk.ac.in

Dr. Rakesh Kumar Mathpal
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Dept of Aerospace
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