

Jet Flows: Subsonic, Supersonic and Synthetic with Applications

Overview

Jet flows are the predominant feature in many engineering devices and systems. They can be used in mixing, cooling, propulsion, spraying and numerous other applications. The jet spread rate and decay of the potential core are two important parameters for mixing. Also, the region where maximum interaction between ambient fluid and jet fluid occurs decides the evolution of the jet in the downstream direction. Understanding the functioning of these devices and systems as well as the development of new applications require a good understanding of the different types of jets and their fundamental behavior.

Jet flows can broadly be classified as free and confined. The rate of evolution of the mean flow and fluctuations are quite different for these two types of jet. Jets generated by imparting a net change of momentum to a fluid with zero net mass flux are known as synthetic jets. This type of jet is especially useful where there is a space constraint as in electronics cooling applications. There are various factors which influence the entrainment and jet spreading such as inlet velocity, nozzle geometry, fluid temperature etc. Due to the instability of the shear layer, vortices are generated as the jet moves in the axial direction. The strength and size of these vortices influence the entrainment process. Understanding the fundamental fluid mechanic aspects of a jet is very important to be able to efficiently apply jet flows in various practical engineering application.

Course duration	3th December 2018 to 7th December 2018													
You Should Attend If...	Number of participants for the course will be limited to fifty.													
	<ul style="list-style-type: none"> ▪ you are an applied mechanical engineer or researcher interested in turbulent jet flow in either a wall bounded or free boundary domain. ▪ you are a mechanical/chemical/civil engineer or research scientist interested in applying jets for your theoretical or experimental studies on turbulence. ▪ you are an atmospheric scientist, physicist or space scientist interested in supersonic jets and their impact on substrates, you are involved in oceanography or are a geophysicist interested in studying the stability of the flow in a wall bounded or free boundary domain in your profession. ▪ you are a student or faculty member from an academic institution and are interested in learning more about jet flows and contributing to turbulent flow research. 													
Fees	<p>The participation fees for taking the course are as follows:</p> <table style="width: 100%; border: none;"> <tr> <td>Participants from abroad :</td> <td style="text-align: right;">US \$ 500</td> </tr> <tr> <td>Industry/ Research Organizations within India: `</td> <td style="text-align: right;">Rs. 15000</td> </tr> <tr> <td>Faculty/Staff from Academic Institutions within India:</td> <td style="text-align: right;">Rs. 5000</td> </tr> <tr> <td>Students from India:</td> <td></td> </tr> <tr> <td>Ph.D./Post-doctoral</td> <td style="text-align: right;">Rs. 2000/3000</td> </tr> <tr> <td>M.Tech./M.Sc.</td> <td style="text-align: right;">Rs. 1000</td> </tr> </table> <p>The above fee includes all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. Boarding, lodging and meal charges are not included in the fees. The participants will be provided with accommodation on a payment basis.</p>		Participants from abroad :	US \$ 500	Industry/ Research Organizations within India: `	Rs. 15000	Faculty/Staff from Academic Institutions within India:	Rs. 5000	Students from India:		Ph.D./Post-doctoral	Rs. 2000/3000	M.Tech./M.Sc.	Rs. 1000
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Faculty/Staff from Academic Institutions within India:	Rs. 5000													
Students from India:														
Ph.D./Post-doctoral	Rs. 2000/3000													
M.Tech./M.Sc.	Rs. 1000													

The Faculty



Prof. Gary W. Rankin is a Professor in the Department of Mechanical, Automotive and Materials Engineering, University of Windsor, in Canada. His research interests include Computational Fluid Dynamics, Flow Visualization, Heat Transfer, Hot-wire Anemometry, Laser Doppler Anemometry, Mathematical Modeling, Optical Measurement Methods, Synthetic Jet Ejectors, Thermo-fluid Measurements and Unsteady Jets. His current active areas of interest are supersonic fluidic oscillators, vortex rings and synthetic jet ejectors.



Dr. Sushanta Dutta is an Associate Professor of Indian Institute of Technology, Roorkee. His research interest includes: Experimental Fluid Mechanics; Experimental Heat Transfer; Optical Measurement Techniques, Active and Passive Control of Flow Field, Wake Dynamics, Turbulence and fluid mechanics in bio mimics and micro fluidics.

Course Co-ordinator

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https://www.iitr.ac.in/departments/ME/pages/GIAN_course_on_Jet_flows:_subsonic_supersonic_and_synthetic_with_applications_.html

<http://www.gian.iitkgp.ac.in/GREGN>

PAYMENT of COURSE FEE AND ACCOMODATION REQUEST FORM
(To reach electronically by 20th November, 2018)

Jet Flows: Subsonic, Supersonic and Synthetic with Applications

December 03-December 07, 2018
Department of Mechanical & Industrial Engineering
Indian Institute of Technology Roorkee
Roorkee, Uttarakhand

<p>After Completion, please e-mail to: Dr. Sushanta Dutta Department of Mechanical & Ind. Engg. Indian Institute of Technology Roorkee Uttarakhand-247667, India Phone: +91-1332285410 (O) +91-1332285432 (R), +91-9411111792 Preferable e-mail: duttafme.iitr@gmail.com Alternate e-mail : duttafme@iitr.ac.in</p>	<p>Affix passport size photograph</p>
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1. Name of applicant (in block letters): Ms./Mr. /Dr.
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2. Status (Mark anyone): Student....., Not a student.....
(a) If a Student:
Academic program under which registered currently.....
Date since when registered.....
Name of Academic/ Research Institution.....
(b) If not a Student
Nature of employment (Teaching, Research, Govt. service, NGO, Industry).....
Organization where employed.....
Employed since.....
Designation.....
Academic qualifications.....
3. Full Postal Address for Communication:

4. E-mail id:
5. Phone numbers: Mobile....., Landline.....
6. Each candidate is requested to complete the following points.

(I) BOARDING AND LODGING:

Are you willing to arrange your boarding and lodging yourself? (Yes/No)

If No, then mention the dates for arrival and departure. Also, give your priority choice for following available hostels in the table below.

(i) Date of Arrival:, (ii) Date of Departure:

Hostel	Room rent (per day)	Meal cost (per day, per person)
1. N. C. Nigam hostel (AC)	₹ 1000/-	₹ 275/-
2. KIH (AC)	₹ 600/-	₹ 202/-
3. Trainee officers hostel (AC)	₹ 600/-	₹ 320/-
4. Trainee officers hostel (Non-AC)	₹ 400/-	₹ 320/-
5. Student's Hostel (Non-AC)	₹ 100/-	₹ 130/-

(iii) Priority choice for available hostel.

S.No.	Name of Hostel	No. of Persons	No. of Rooms	Single/Sharing
1.				
2.				
3.				
4.				
5.				

Note:

- (i) Those who are coming with family can stay only in N.C. Nigam, KIH and Trainee officers hostel based on the availability of rooms.
- (ii) Above room rents and meal costs are tentative. For sharing of rooms cost will be shared.

(II) REGISTRATION:

For registration each candidate is asked to send a required demand draft (based on his/her appropriate status as defined in point (2)) in favor of Conference, Seminar & Symposium, IIT ROORKEE, (Acc. No. 33136732957, Branch code 1069). Name of the Bank: STATE BANK OF INDIA, Branch office: Indian Institute of Technology Roorkee, 247667. IFSC CODE: SBIN0001069. GST No. 05AAAL10033R125.

Candidate can also deposit required registration fee online in above account. However, they have to forward the transaction document in the following email id: duttafme.iitr@gmail.com

Demand Draft No. / Online transaction number	
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Note:

- (i) Soft copy of this application should be sent by e-mail latest by 20th October, 2018. Those who are unable to e-mail can send the hard copy of their applications at above mentioned address latest by 20th October, 2018.
- (ii) The seats are limited and will be filled generally on the first come first serve basis. Decision of the course coordinator will be final in this regard. Once we receive the soft copy of this filled form, a confirmation e-mail will be sent.
- (iii) Please start your travel to Roorkee to attend the course only if you have received an e-mail confirmation. To confirm your status as per point (2), bring a valid ID.

Date:

Signature of applicant