



Advanced Instability Methods (AIM) for Fluid Mechanics and Combustion



Workshop on Fluid Mechanics and Combustion

Organising committee

Krishnendu Sinha, IIT Bombay (Convenor)
R. I. Sujith, IIT Madras
Rama Govindarajan, JNCASR
Matthew Juniper, Cambridge University

Venue

Victor Menezes Convention Center, IIT Bombay.

Contact Information

Please contact the following if you need any assistance or if you have any questions:

Mr. Sathesh Mariappan (sathesh.ae@gmail.com; 9840724831) for technical session
Mr. Russell Quadros (russell@aero.iitb.ac.in; 9619382360) for local hospitality
Ms. Bijaylakshmi Saikia (bijaylakshmi.iitb@gmail.com; 9920145304) for local hospitality
Mr. Sanjay Mohite (sanjay@casde.iitb.ac.in; 9867877324) for local travel arrangements

Accommodation

Limited accommodation is available at IIT Bombay Guest house for the delegates. Students will be housed in the hostels. Airport pickup and drop can be arranged if necessary. Please contact Mr. Sanjay Mohite (sanjay@casde.iitb.ac.in) for more information.



Advanced Instability Methods (AIM) for Fluid Mechanics and Combustion

First meeting



DAY 1, January 20 (Friday), 2012, IIT Bombay

“Fluid mechanics”

08:30 – 08:45	Welcome and introduction to workshop.	Krishnendu Sinha, R. I. Sujith & M. P. Juniper
08:45 – 09:00	Participants' introduction	All
09:00 – 10:30	Pedagogical lecture: Shear flow instability	Dan Henningson, KTH Stockholm
10:30 -- 11:00	Tea Break	
11:00 – 11:30	Role of large scale structures in instabilities and turbulence	Mahendra Kumar Verma, IIT Kanpur
11:30 – 12:00	Stability of separation bubbles	O N Ramesh, IISc
12:00 – 12:30	Stability analysis of polymer extrusion film casting (EFC)	Pankaj Doshi, NCL Pune
12:30 – 13:30	Lunch	
13:30 – 15:00	Tutorial: Analysis of nonmodal and nonlinear instability	M. P. Juniper, Cambridge
15:00 – 15:30	Tea Break	
15:30 – 16:00	Transition and turbulence at high Mach number	V. Kumaran, IISc
16:00 – 16:30	Transition in high Mach number flows with chemical reactions	Christian Stemmer, TU Munich
16:30 – 17:00	The optimal path to turbulence in shear flows	Dan Henningson, KTH Stockholm
17:00 – 17:30	How a dipole dynamo supports itself	Binod Sreenivasan, IIT Kanpur
17:30 – 18:00	Convective and absolute instabilities in pressure-driven two-layer channel flow	Kirti Chandra Sahu, IIT Hyderabad
19:00 – 21:00	Dinner at Gulmohar 3 rd floor	



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DAY 2, January 21 (Saturday), 2012, IIT Bombay

“Combustion”

09:00 – 10:30	Pedagogical lecture: Dynamical systems’ approach towards analyzing thermoacoustic instability	R. I. Sujith, IIT Madras
10:30 -- 11:00	Tea	
11:00 – 11:30	TBA	S. R. Chakravarthy, IIT Madras
11:30 – 12:00	Flow problems in launch vehicles and scramjet	V. Ashok, VSSC, ISRO
12:00 – 12:30	Dynamics of pulse combustor – case studies	Swarnendu Sen, Jadavpur Univerity
12:30 – 13:30	Lunch	
13:30 – 15:00	Tutorial: Continuation methods	Priya Subramanian, IIT Madras
15:00 – 15:30	Tea Break	
15:30 – 16:00	Investigating dynamics of combustion driven oscillations leading to lean blowout	Lipika Kabiraj, IIT Madras
16:00 – 16:30	Nonlinear time series analysis of thermoacoustic interactions in a partially premixed swirl stabilized combustor	Gireesh Tampi, IIT Madras
16:30 – 17:00	Instabilities are good: creating a decentralized solar thermal power solution using thermoacoustics	Vishnu Unni, CSIR & IIT Ma



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DAY 3, January 22 (Sunday), 2012, IIT Bombay

“Other fluid flows”

09:00 – 10:30	Pedagogical lecture: Local stability analysis	M. P. Juniper, Cambridge
10:30 -- 11:00	Tea	
11:00 – 11:30	Nonlinear analysis of breakup of liquid sheets and spray formation	Achintya Mukhopadhyay, Jadavpur University
11:30 – 12:00	Study of porous media with Karhunen Loeve expansion	Sunetra Sarkar, IIT Madras
12:00 – 12:30	Problems of linear instability in rotating shear flows and its astrophysical implications	Banibrata Mukhopadhyay, IISc
12:30 – 13:30	Lunch	
13:30 – 15:00	Tutorial: Local stability analysis	M. P. Juniper, Cambridge
15:00 – 15:30	Tea Break	
15:30 – 16:00	Electromagnetohydrodynamic and Electroosmotic instabilities of thin liquid films	Dipankar Bandyopadhyay, IIT Guwahati
16:00 – 16:30	Electrohydrodynamic stability	Rochish Thaokar, IIT Bombay
16:30 – 17:15	Discussions/road ahead	All
17:15 – 17:30	Wrap up/vote of thanks	Kishnendu Sinha, R. I. Sujith and M.P. Juniper