

Computational acoustics: Engineering and scientific approaches

Overview

Computational acoustics is an important and active research area in which numerical solutions of formation and propagation of acoustic disturbances are obtained. Accurate simulation of acoustics is a challenge as the pressure fluctuations associated with acoustic signals are usually very small as compared to the background pressure field. Propagation of a computed acoustic signal strongly depends on the phase, dissipation and the dispersion properties associated with individual wavenumber component for the used discretization schemes. Calculations for acoustical problems have to be performed for a long duration avoiding numerical instabilities to obtain acoustical spectra. Numerical methods used for such simulations must have high spectral resolution, neutral stability and physical dispersion relation preserving nature. First module of this course is dedicated to expose researchers to high accuracy schemes essential for computational acoustics and in the second module researchers will learn solution and post-processing methodologies useful for computational acoustics problems. Tutorials will be conducted to provide hands on experience to the participants. This specialized course is targeted towards teachers, scientists, practicing engineers and students (undergraduate and postgraduate) in the disciplines of Mechanical, Aerospace and Civil engineering.

Modules	<p>A: Construction & analysis of DRP schemes used in acoustic problems: May 23- May 27 2016</p> <p>B: High accuracy simulation & post-processing of acoustic problems: May 30 - June 03 2016</p> <p>Number of participants for the course will be limited to fifty.</p>
You Should Attend If...	<ul style="list-style-type: none"> ▪ You are a senior undergraduate or a graduate student pursuing M. Tech./ Ph. D. programme in the Mechanical, Aerospace or Civil Engineering Departments; ▪ You are a faculty and want to update knowledge and improve understandings of the best practices and recent advances in the field of computational acoustics; ▪ You are a scientist or a practicing engineer working in government research organizations or industries.
Fees	<p>The participation fees for the course is as follows:</p> <p>Participants from abroad : US \$250/- Industry/ Research Organizations: 10,000/- Academic Institutions: Students: Rs. 2,000/- and Faculty: Rs. 5,000/-</p> <p>The above fee includes all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 Hr free internet facility. The participants will be provided an accommodation in the Institute hostel on payment basis at a concessional price. Food, travel and accommodation charges will be borne by the participants.</p>

The Faculty



Prof. Datta Gaitonde is the professor at the Mechanical & Aerospace Engineering department at The Ohio State University. His research interests include high-fidelity computational analysis of fluid phenomena and their control in all speed regimes, computational aero-acoustics, wing stall, nozzle flows, shock-wave boundary layer interactions and scramjet flow paths.



Prof. Tapan K Sengupta has been involved in research and teaching CFD for more than two decades in India and abroad. His interest is in developing CFD techniques for high accuracy computing of transitional and turbulent flows, compressible flows and problems of atmospheric sciences, LES/ DNS. Theoretical fluid mechanics continues to be his area of primary interest.



Dr. Yogesh Bhumkar is presently working as an assistant professor in the School of Mechanical Sciences, IIT Bhubaneswar. He has developed high accuracy schemes and filters essential for High Performance Computing of transitional flows. Presently he is active in the research area of computational acoustics.



Dr. Sathyanarayana A. is presently working as an assistant professor in the School of Mechanical Sciences, IIT Bhubaneswar. He is currently working on DNS of turbulent flows using novel Fourier space algorithms and Dealiasing techniques for Fourier Spectral Methods for Compressible Flows.

Venue:

School of Mechanical Sciences

IIT Bhubaneswar, Samantapuri,

Bhubaneswar, 751013, Odisha

Course Coordinators

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Register the course at:

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

Last date of Registration:
1st May 2016