



INDIAN INSTITUTE OF TECHNOLOGY KANPUR

Distinguished Alumnus Award

Sanjiva K Lele

Sanjiva K Lele obtained his B. Tech. degree in Mechanical Engineering from IIT Kanpur in 1980. He then obtained a Ph. D. degree in Mechanical Engineering from Cornell University in 1985.

Dr Lele is a world-renowned expert in fluid dynamics and aero-acoustics. He has developed high accuracy numerical methods for turbulent flow simulations and has used them to advance the scientific understanding of compressibility effects in high-speed flows, shock turbulence interaction and aerodynamic sound generation in unsteady flows. He has developed computational algorithms for aero-acoustics simulation including methods for direct noise computations and hybrid approaches where noise radiation is predicted using an aero-acoustics theory. His research on computational algorithms for direct and large eddy simulation of compressible turbulent flows has had a major impact on the field of computational fluid dynamics, computational aerodynamics and computational acoustics. The concept of optimized numerical schemes minimizing dispersive and dissipative errors, and in particular the optimized compact finite difference schemes he introduced have been widely adopted in many diverse research communities including turbulence and aero-acoustics, combustion, geophysics and electromagnetics. Many groups around the world have developed sophisticated simulation and analysis software using these algorithms.

Dr Lele has contributed to improved understanding of the flow-processes responsible for noise-generation in high-speed jets. He was successful in capturing aerodynamic sound generated by vortex roll-up and pairing of vortices for the first time and allowed an assessment of approximate source terms for predicting the highly directional noise radiation. During the last decade Dr Lele has investigated airframe noise problems and achieved first principle prediction of trailing-edge noise for turbulent flow. More recently, he discovered the mechanism underlying 'crackle' noise from heated supersonic jets. Some of his original research papers on boundary conditions for aero-acoustics, sound generation in mixing layers and jets, compressibility effects on turbulence, shock-turbulence interaction have extremely high citations.

Dr. Sanjiva K Lele is conferred upon the Distinguished Alumnus Award-2016 of Indian Institute of Technology Kanpur for his Academic Excellence in Outstanding Contributions to Fluid Mechanics Research.