

Overview of recent Aeroacoustics research at ISVR

报告人 Speaker: Dr. Chaitanya Paruchuri
单位 Affiliation: University of Southampton
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报告摘要 Abstract

This talk presents an overview of recent aeroacoustics research carried out at the Institute of Sound and Vibration Research (ISVR), University of Southampton, with a focus on fundamental mechanisms of aerofoils. The first part addresses **tip leakage noise**, one of the least understood noise sources in turbomachinery. Arising from the interaction between tip leakage flow, blade tips, and the casing boundary layer, this noise source remains difficult to predict and control. Using experimental and parametric investigations, the study identifies three key non-dimensional parameters governing tip leakage noise: the angle of attack, the ratio of maximum aerofoil thickness to gap size, and the ratio of gap size to boundary-layer thickness. The second part focuses on the **aeroacoustics of tandem plates** in turbulent inflow. This work investigates the hydrodynamic origin of the π -phase inversion observed in the acoustic radiation from two flat plates arranged in tandem. While classical unsteady aerodynamics predicts the generation of induced wake vorticity at a plate trailing edge to satisfy the unsteady Kutta condition, this mechanism has remained difficult to isolate experimentally in grid-generated turbulence.

报告人简介 Speaker Bio

Dr. Chaitanya Paruchuri is currently Head of the Acoustics Group and Associate Professor at the Institute of Sound and Vibration Research (ISVR), University of Southampton. He is a member of the Rolls-Royce University Technology Centre in Propulsion Systems Noise and his recent research interests include propeller noise, aerofoil noise, and duct acoustics. He was awarded the prestigious five-year Royal Academy of Engineering Research Fellowship for his work on tip leakage noise in ducted fans.



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