



Mechanical Engineering Seminar Series

Synchronization effects in n-periodic fluid systems

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[ME Seminar Zoom link](#) (QR Code below)

Password 5777



Abstract

Fluid systems that consist of an n-periodic array of identical subunits are ubiquitous in many applications, ranging from turbomachinery to combustion systems. The study of this type of systems has mostly concentrated on the single-unit dynamics with periodic boundary conditions. In this presentation, we concentrate on synchronization effects across subunits and develop a mathematical and computational framework for the quantitative study of macro-behavior that spans more than one unit. Modal and non-modal spectral analysis will be generalized to capture synchronization effects, and examples from turbomachinery research and annular combustor geometries will be presented to showcase the framework

Bio

Prof. Peter Schmid received his Engineer's Degree from the Technical University Munich and his PhD in mathematics from the Massachusetts Institute of Technology. He then joined the Department of Applied Mathematics of the University of Washington, Seattle before taking up a research director position with the French Scientific Research Agency (CNRS) at the Laboratoire d'Hydrodynamique (LadHyX) of the Ecole Polytechnique near Paris. He is currently Chair of Applied Mathematics and Mathematical Physics in the Department of Mathematics of Imperial College London. His research focuses on stability theory, flow control, model reduction and computational fluid dynamics. He is also interested in data decomposition techniques and algorithms for the extraction of pertinent flow processes from numerical and experimental data

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