Universidad Carlos III de Madrid

Seminario del Instituto Gregorio Millán

Magnetic Resonance Imaging: a tool for investigating fluid flows

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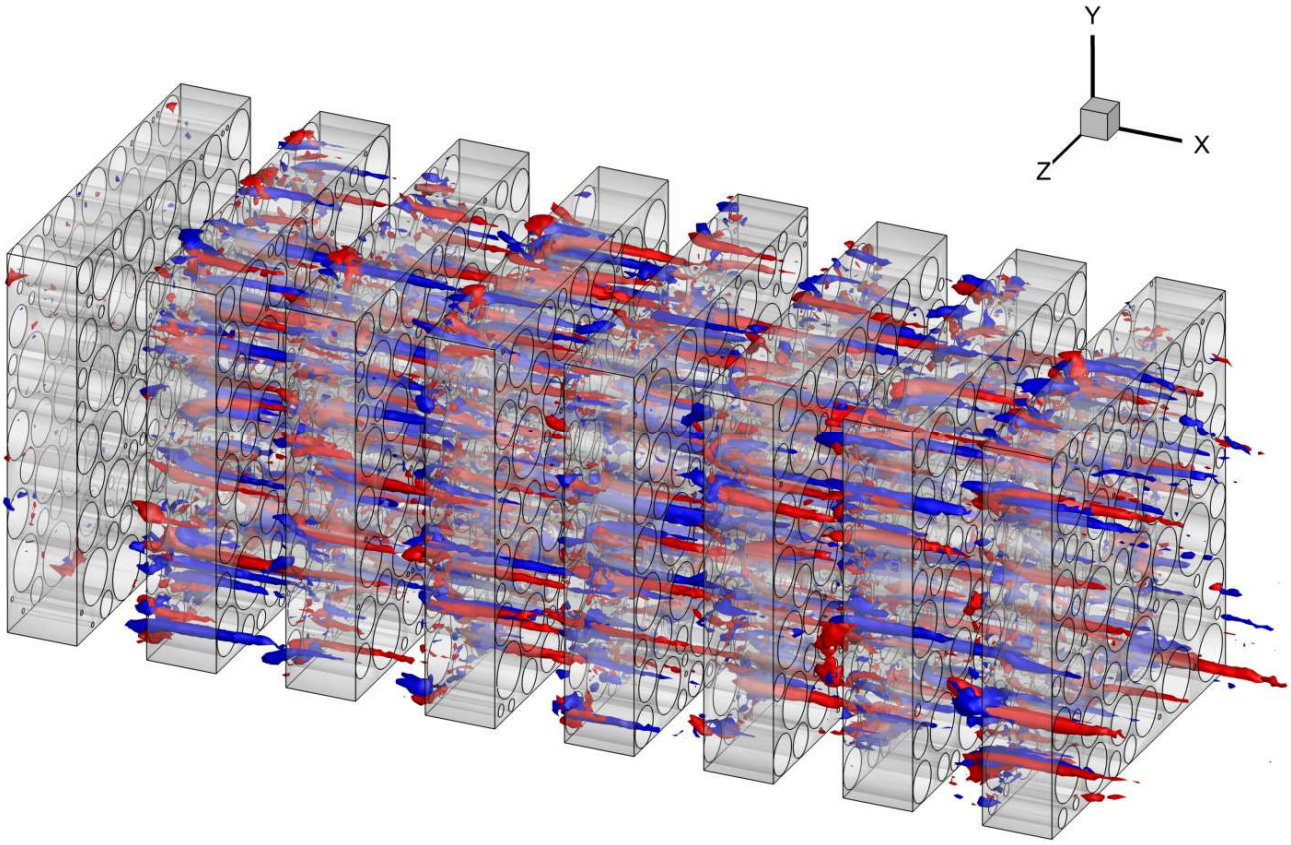
Abstract

Magnetic Resonance Imaging (MRI) is a well-established technique in the medical community, able to produce tomographic and volumetric images of the human body. MRI can also be used to perform accurate velocimetry in fluid flows, thanks to the phase-sensitivity of the MR signal to particle motion. In the last decade the full potential of MRI-based techniques to investigate engineering flows has been demonstrated. In this seminar recent applications will be presented in which mean velocity and scalar fields are measured with high spatial resolution. Those include: three-dimensional diffusers, jets in cross-flow, turbine blade cooling configurations, compact heat exchangers, and flow in porous media. The advantages of the technique emerge: the capability of providing three-dimensional fields in complex geometries, with high data yield and without the need of optical access. The potential for developments in areas such as environmental and biomedical engineering is discussed.

Día y hora: Jueves, 28 de junio de 2012 a las 12:30 horas
Lugar: Sala 2.3.B04 (Edificio Sabatini), Universidad Carlos III



Flow through perforated fins with random hole distribution. Isosurfaces of positive (negative) streamwise vorticity in red (blue). Reynolds number based on mean hole diameter is 380. Flow is in positive X direction.