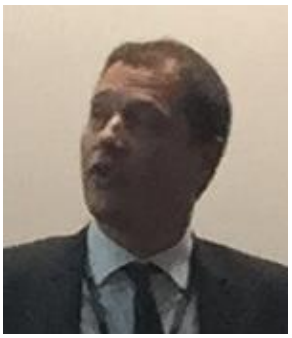
Disertante/ Speaker:
Dr. Federico Piscaglia



Titulo/ title:
Time-Resolved High-Fidelity Simulations of Moving Boundary Problems in OpenFOAM: an Application to the Simulation of Primary Jet Atomization and Cavitation in High-Pressure Fuel Injectors

Resumen/Abstract:
Most of the three-dimensional real-life simulations are generally unsteady and require time-resolved turbulent modeling in moving geometries. Body-fitted simulation are computationally expensive and they involve big amounts of data to store; additonally, the complexity of data pre- and post-postprocessing represents a further limit for many non-experienced users. The presentaϴon shows recent developments in the OpenFOAM technology with particular focus on the work done on the implementation of a transient multiphase VOF solver supporting dynamic mesh handling and cavitation. Examples of applications on the simulation of multiphase (VOF) modeling of cavitating flows in GDI injectors during the opening and closure events is provided.

Bio Conferencista/ Bio Lecturer:
Federico Piscaglia earned a PhD in Mechanical Engineering in 2005 at the Politecnic University of Milan, where since 2015 he serves as Associate Professor. Prof. Piscaglia's research activity lies in the area of Computational Fluid Dynamics (CFD), with particular focus on developments in transient modeling, moving mesh, turbulence and multiphase methodologies in C++ libraries based on the OpenFOAM technology. He teaches "Computational techniques for thermo-chemical propulsion" (a CFD class on turbulent reacting flows, with particular focus on OpenFOAM) at the Master Program of the Faculty of Aerospace Engineering and "Internal Combustion Engines" (BSc level) at the Faculty of Mechanical Engineering.
SERVICE
- Visiting (PhD) Researcher at the Engine Research Center, Univ. of Wisconsin-Madison, USA (2003-2004)
KEYNOTE SPEECH:
- Keynote Speaker at the 4th Annual OpenFOAM User Conference 2016 by OpenCFD Ltd, owner of the trademark OpenFOAM (2016)
- Keynote Speaker at the VERIFI Workshop at the Argonne National Laboratory (Lemont,IL, USA): "Advanced methods for High-Fidelity Simulation of IC Engines"
- Speaker at the plenary session of the 10th OpenFOAM Workshop (Goteborg, Sweden, 2010)
- Keynote Speaker at PRACE Conferences for "HPC methods in Engineering" (2012-2015), Cineca Supercomputing Center (Italy)
RECOGNITIONS AND AWARDS:
- Recognition for "Excellence in Oral Presentation" at the SAE World Congress 2015, paper SAE 2015-01-0384
- Recognition for "Excellence in Oral Presentation" at the SAE World Congress 2015, paper SAE 2015-01-0395
- Citation for substantial contribution to the development of advanced mesh motion strategies for CFD - Pointwise Inc, 2015
- Recognition for state-of-the-art development for LES simulation of IC engines on HPC supercomputers - Prace 2013
- Invited distinguished Lecturer at the University of Santiago-Chile (Aug 2016)