



SPRING 2019 SEMINAR SERIES

Large Eddy Simulation of turbulent reacting flows

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ABSTRACT

With the constant increase of massively parallel computing power, Large Eddy Simulation (LES) has emerged as a powerful numerical approach to address complex problems, such as turbulent reacting flows. LES is able to provide reliable predictive solutions of both academic and real industrial systems, and gives new insight into the underlying physical phenomena. Moreover, to alleviate some uncertainty associated to boundary conditions, LES can be coupled to other solvers to include complementary system elements and physics in the computation.

After a rapid overview of the physical models, numerical methods and High Performance Computing (HPC) approaches used for LES, a selection of applications will be presented to demonstrate the capacity of LES and coupled multiphysics to tackle complex problems with accuracy and efficiency.

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BIO:

Dr. Bénédicte Cuenot obtained her engineering and master degree from Ecole Centrale de Paris in 1990. After one year as research engineer in the University of Boulder (CO, USA), she came back to France where she defended her PhD in 1995 and HdR in 2000, both in the field of numerical combustion. She is now the leader of the combustion research group at CERFACS, developing advanced and massively parallel softwares for the numerical simulation (DNS and LES) of turbulent combustion and heat transfer (including thermal radiation) in industrial systems. With these tools she addresses various topics such as pollutant emissions, ignition and extinction, combustion efficiency or thermal fatigue of combustion chambers. Dr. Cuenot teaches combustion and fluid mechanics in various universities and has authored more than 80 peer-reviewed journal papers. She has participated to many collaborative projects at the national and international level, and is much experienced in coordinating european projects, mostly financed by the European Commission where she also acts as an expert evaluator. She has been distinguished as a Fellow of the Combustion Institute in 2018 and is a member of the Editorial Board of Combustion and Flame since 2018.