

**HPC methods for Engineering - CINECA Milano**  
<https://corsi.cineca.it/en/hpc/hpc-methods-engineering-applications/milano-20180618>

**Monday, June 18th**

|       |       |  |  |
|-------|-------|--|--|
| 8:30  | 9:15  | Registration   |  |
| 9:15  | 9:45  | Introduction<br>I. Spisso/C. Arlandini<br>HPC Dept, CINECA   |  |
| 9:45  | 10:45 | HPC CINECA Infrastructure: State of the art, towards the exascale, and the HPC Engineering environment<br>I. Spisso<br>HPC Dept, CINECA  |  |
| 10:45 | 11:15 | Coffee break   |  |
| 11:15 | 12:00 | CINECA on-going projects for CAE applications: overview<br>C. Arlandini<br>HPC Dept, CINECA  |  |
| 12:00 | 12:45 | The LINCOLN Project<br>R. Ponzini<br>HPC Dept, CINECA  |  |
| 13:00 | 14:30 | Lunch  |  |
| 14:30 | 15:15 | Using STAR-CCM+ in HPC Environment<br>A. Massobrio<br>Siemens Industry Software  |  |
| 15:15 | 16:00 | Overview of CFD activities @ DAER/POLIMI: from turbulence modeling with DNS to adjoint optimization<br>M. Quadrio<br>Politecnico di Milano, Department of Aerospace Science and Technologies |  |
| 16:00 | 16:30 | Coffee break   |  |
| 16:30 | 17:15 | Multiphysics simulation of Gen-VI nuclear reactors<br>Manuele Auffero, Carlo Fiorina<br>Milano Multiphysics  |  |
| 17:15 | 18:00 | ILES and hybrid RANS/LES with a DG method<br>A. Colombo<br>Università di Bergamo, Department of Engineering and Applied Science  |  |

**Tuesday, June 19th**

|       |       |  |  |
|-------|-------|--|--|
| 9:00  | 9:45  | A MultiPhase Dynamic-VoF Solver to Model Primary Jet Atomization and Cavitation inside High-Pressure Fuel Injectors using OpenFOAM<br>F. Piscaglia, F. Giussani, A. Montorfano (Politecnico di Milano)<br>J. Hélie (Continental Automotive)<br>S. M. Aithal (Argonne National Lab) |  |
| 9:45  | 10:30 | CFD for industries @ RED<br>R. Rossi<br>RED, Research and Development in Fluid Dynamics, Rimini, RN, Italy   |  |
| 10:30 | 11:00 | Coffee break   |  |
| 11:00 | 11:45 | Hybrid RANS/LES modelling of film cooling in high-pressure turbine vanes<br>S. Ravelli<br>Università di Bergamo, Department of Industrial Engineering  |  |
| 11:45 | 12:30 | Advanced Simulations for Wind Farms: a H2020 project supported by PRACE<br>A. Frigerio / P. Schito<br>Politecnico di Milano, Department of Mechanical Engineering  |  |
| 12:30 | 14:30 | Lunch  |  |
| 14:30 | 15:15 | OpenFOAM activity @ CINECA: in situ visualization with Catalyst<br>S. Bna<br>HPC Dept, CINECA  |  |
| 15:15 | 16:00 | Some HPC activity at MOX@DMAT of Politecnico di Milano<br>L. Formaggia<br>Dipartimento di Matematica "Francesco Brioschi" - Laboratorio di Modellistica e Calcolo Scientifico MOX, Politecnico di Milano, Italy  |  |
| 15:15 | 15:45 | Coffee break   |  |
| 15:45 | 16:30 | CFD simulations of centrifugal pumps in HPC environment<br>M. Ghisalberti, A. Fracassi<br>Industrie Saleri Italo S.p.A., Department Simulation/CAE, Lumezzane (BS), Italy  |  |

**Wednesday, June 20th**

**"Accelerating and parallelizing MATLAB code on HPC infrastructure"**

|       |       |  |  |
|-------|-------|--|--|
| 9:30  | 10:45 | Accelerating and parallelizing MATLAB code on HPC infrastructure<br>F. Perino<br>Mathworks Italy |  |
| 10:45 | 11:30 | Configuration, settings and usage of MATLAB @ CINECA<br>I. Spisso<br>HPC Dept, CINECA            |  |
| 11:30 | 11:45 | Coffee break   |  |

|       |       |   |  |
|-------|-------|---|--|
| 11:45 | 13:00 | Offloading existing applications to clusters and clouds to free-up desktop resources<br>MATLAB Parallel Computing basics: worker processes, parallel-enabled toolboxes, implicit and explicit multi-threading<br>Parallelizing computations<br>Scaling desktop workflows to clusters for additional throughput<br>Mathworks Italy |  |
| 13:00 | 13:15 | Question Time   |  |
| 13:30 | 14:30 | Lunch   |  |
|       |       | End of the Workshop   |  |