



# Accurate Simulations in Hydro-Machinery and Marine Propellers

## Summer School Program

### Monday, 25<sup>th</sup> of September

- 10:00 - 10:10 **Aljaž Škerlavaj:** Opening with a short presentation of ACCUSIM project
- 10:10 - 10:20 **Bojan Črv:** Welcome speech with a short presentation of Kolektor Turboinštitut
- 10:20 - 10:30 **Enrico Nobile:** *A brief overview of research activities at Fisica Tecnica (Thermal Fluids) at the Dept. of Architecture and Engineering of the University of Trieste*
- 10:30 - 11:30 **Jure Ravnik:** *Turbulence modelling*
- 11:30 - 11:50 Coffee break
- 11:50 - 12:30 **Dragica Jošt:** *Improvement of efficiency prediction for axial water turbines with advanced turbulence models*
- 12:30 - 14:00 Lunch
- 14:00 - 14:40 **Aljaž Škerlavaj:** *Numerical simulation of flow in a high head Francis turbine with prediction of efficiency, rotor stator interaction and vortex structures in the draft tube, Workshop Francis 99*
- 14:40 - 15:40 **Maja Ondračka:** *Introduction to OpenFOAM*
- 15:40 - 16:00 **Dragica Jošt:** *Comparison of results obtained with OpenFOAM and Ansys-CFX*

### Tuesday, 26<sup>th</sup> of September

- 10:00 - 11:15 **Matevž Dular:** *Advanced experimental and numerical techniques for cavitation erosion prediction*
- 11:15 - 11:30 Coffee break
- 11:30 - 12:10 **Mitja Morgut:** *Calibration of mass transfer models for the numerical prediction of sheet cavitation around a hydrofoil*
- 12:10 - 12:40 **Dragica Jošt:** *Cavitation prediction for water turbines*
- 12:40 - 14:10 Lunch
- 14:10 - 14:50 **Mitja Morgut:** *Numerical predictions of the cavitating flow around model scale propellers working in uniform and non-uniform inflow*
- 14:50 - 15:30 **Aljaž Škerlavaj:** *Sheet and cloud cavitation prediction in double suction centrifugal pump*
- 15:30 - 16:00 **Dragica Jošt:** *Simulation of cavitating vortex rope in the draft tube of a Francis turbine*

### Wednesday, 27<sup>th</sup> of September

- 10:00 - 11:15 **Carlo Poloni:** *No-free lunch theorem from an engineering perspective*
- 11:15 - 11:35 Coffee break
- 11:35 - 12:00 **Rok Pavlin:** *Pump types and hydraulic design approach*
- 12:00 - 12:30 **Aljaž Škerlavaj:** *Optimization of a double-sided centrifugal pump*
- 12:30 - 14:00 Lunch
- 14:00 - 14:30 **Roberto Renato Stopar:** *Multi-objective optimization of the Francis turbine runner cone*
- 14:30 - 15:30 Visit of Turboinstitut's laboratory for model testing of water turbines and pumps / Presentation of CFX Pre and Post
- 15:30 - 16:00 **Aljaž Škerlavaj:** Closing