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POST-DOC PROPOSAL - Fixed-term contract

Development of Numerical Method in Next-Generation Simulation Software CODA

Reference: CFD-2023-DAV-03
Team: CFD
Research unit: Advanced Aerodynamics and Multi-Physics
Salary: 40 K€/year (gross)
Starting date: Jan 2024

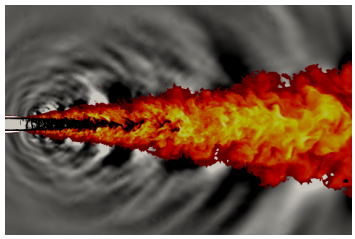
Location: 42 avenue Gaspard Coriolis – 31057 Toulouse
Contact person: Guillaume Daviller
E-mail: daviller@cerfacs.fr
Duration: 1 year
Level of education required: PhD

HOST LABORATORY

The **Cerfacs** is a fundamental and applied research center specializing in modeling and digital simulation. Through its resources and expertise in high-performance computing, it addresses major scientific and technical problems in public and industrial research. The Cerfacs teams develop innovative methods and software solutions to meet the needs of the aeronautics, space, climate, energy, and environment sectors. Cerfacs works in close interaction with its seven associates: **Airbus**, **Cnes**, **EDF**, **Météo France**, **Onera**, **Safran**, and **TotalEnergies**.

HOSTING TEAM

The CFD (Computational Fluid Dynamics) team is the largest team at CERFACS. It focuses on the simulation of flows by developing advanced numerical methods and applying them to aircraft, rockets, helicopters, car engines, turbines, etc. This team develops essential tools in many application fields with a well-known leitmotiv in industry today: let's calculate systems (aircraft, engines, etc.) before building them.



JOB DESCRIPTION

Topic(s): Aerodynamics Acoustics Turbomachines High Performance Computing

Context: The development of new CFD software is essential to optimize the cost of computation in current and future high-performance computing clusters. In the particular case of computational aeroacoustics, used to design noise reduction technologies for aircraft, simulation time must be reduced.

Mission:
The main objective of this postdoctoral position is to implement and validate non-reflective boundary conditions [1] in the new CFD software CODA which will be the new reference solver for aerodynamic applications inside the **Airbus** group. The target is to perform Large-Eddy Simulation on unstructured grids based on second-order finite-volume and higher-order Discontinuous-Galerkin (DG) discretizations.
[1] Daviller et *al.* Computers and Fluids, 190, 2019, doi:10.1016/j.compfluid.2019.06.027

DESIRED PROFILE

Background required:

Numerical simulation | Fluid dynamics | C++ & Python

Languages: French or English

Abilities:

Capacity for analysis and synthesis | Innovation capacity | Ability to work independently

Relational qualities | Rigorous

PLEASE SEND CV + COVER LETTER