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POST-DOC PROPOSAL - Fixed-term contract

Next Generation Installed Propeller Simulations

Reference: CFD-2023-DAV-02
Team: CFD
Research unit: Advanced Aerodynamics and Multi-Physics
Salary: 40 K€/year (gross)
Starting date: Jan 2024

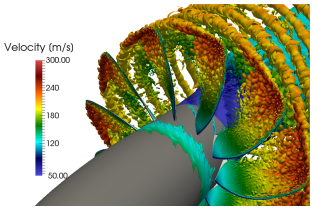
Location: 42 avenue Gaspard Coriolis – 31057 Toulouse
Contact person: Guillaume Daviller
E-mail: daviller@cerfacs.fr
Duration: 1 year
Level of education required: PhD

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: Propeller engines (turboprop, CROR...) represent one of the solutions being considered to reduce the environmental pollution generated by aircraft in the near future. In order to identify the best computational practices needed to simulate the aerodynamic and acoustic performance of this type of engine, it is proposed to carry out CFD simulations on this type of configuration in order to anticipate potential performance problems.

Mission:
The main objective of this postdoctoral position is to investigate the aerodynamic interaction and acoustics of an installed propeller configuration. Moreover, it is proposed to evaluate the computational methods available in the new CFD software CODA which will be the new reference solver for aerodynamic applications inside the **Airbus** group. This study, in addition to the physical analysis of the simulated configuration, will enable us to propose solutions to the bottlenecks encountered.

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