CERFACS

JOB OFFER – CDI
Research engineer in High Performance Computing, Code Development, Integration and maintenance

---

OFFER INFORMATION

Reference: LG-E&S-REng-2025   **Location**: 42 Avenue Gaspard Coriolis – 31057 Toulouse
Team: E&S   **Contact person**:   GICQUEL Laurent

Starting date: 01/04/2025
Salary: from 42   K€/year (gross) depending on qualifications and experience
Level of education required: PhD and/or Post-Doc

Key words: HPC, code maintenance and development, integration, web integration, AVBP

CERFACS

Cerfacs is a private research, delevopment, transfer and training center for modeling, simulation and high-performance computing. Cerfacs designs, develops and proposes innovation software methods and solutions to meet the needs of its partners in the aeronautics, space, climate, environment and energy sectors. Cerfacs trains students, researchers and engineers in simulation and high-performance computing.
Cerfacs works closely with its seven partners: Airbus, Cnes, EDF, Météo France, Onera, Safran et Total.

HOSTING TEAM - E&S

 The Energy & Safety team, formerly known as the CFD-Combustion team, focuses on cross-disciplinary activities aimed at developing, optimizing and deploying scientific codes dedicated to advanced combustion simulations of industrial relevance. The team focuses particularly on flows encountered for aircraft, rockets, helicopters, car engines, turbines and more. As a result of such efforts, essential tools emerge for a wide range of applications, with the leitmotiv: let's calculate systems before we build them. More specifically, team members develop models and tools covering chemical reduction, turbulence, combustion, two-phase systems, combustion instabilities, etc., to meet both academic and industrial challenges. Thanks to its position, the team collaborates with numerous scientific groups, design offices of Cerfacs associates, and other Cerfacs teams.

CONTEXT

 As part of its activities with Cerfacs and external partners, the E&S team is called upon to respond to a variety of requests. On the one hand, the skills covered by the team concerning fluid mechanics, turbulence, combustion and, more generally, complex flows, the use of its codes is increasingly required to provide support to industry and respond to concrete problems. On the other hand, the implementation of high added value HPC solutions for industry in the context of "grand challenges" clearly ensures to the team its leading position while benefiting the community as a whole. As a result of the increase in these various types of requests, the team needs to strengthen itself and is looking for a research engineer to contribute to the maintenance, the integration and the documentation of its multiple tools including the next generation of solutions based on AVBP. Needs of developing a next generation code development environment will also have to be addressed with the help of the E&S members as well as the COOP team.

30/01/2025

MISSION

- You will be in charge of carrying out contractual as well as actions of integration, maintenance and documentation around the code AVBP in relation with industry and the HPC world (GENCI, EuroHPC, computing centers) as well as other E&S team researchers.
- You will be responsible for supporting the Team research members through actions of integration, validation and code developments in tight collaboration with AVBP's code manager.
- You will prepare and deploy a reliable development environment based on the team multiple tools, making them available in the short term, both internally and externally.
- You contribute to the follow-up and operational support as well as the training of Cerfacs staff around the team's research themes.
- You will contribute to and represent Cerfacs in its relations with industrial partners, by drafting, monitoring and driving contracts of all kinds.
- You will be involved in the maintenance and documentation of the E&S team's tools for advanced simulation of turbulent combustion and turbomachinery.

DESIRED PROFILE

- You have a PhD and ideally at least 1 to 2 years' experience in research or industry, in large code development, scientific computing / HPC...
- You have a good knowledge of code management and generation software needed to maintain and develop large industrial type codes.
- You have a good knowledge of LES and experience with CFD codes, with experience of AVBP software if possible.
- You have professional experience in drafting and monitoring projects.
- You enjoy working as part of a team and are happy to promote your work or the team's contributions to industry or academia.
- You are familiar with software engineering and programming tools related to HPC: Fortran, MPI, Git/Gitlab, debuggers, profilers.
- You are able to present collective results of collaborations with industry or academia.

WHAT WE OFFER AT CERFACS

- Broad access to technology, a rich interpersonal environment, in-house skills recognized nationally and internationally.
- An inclusive and equitable work environment.
- A structure accessible to people with disabilities.
- A complementary health insurance scheme offering excellent health care coverage in addition to social security, with the possibility of enrolling family members (spouse and children).
- 6 weeks' annual leave (with the possibility of 22 extra days' leave per year linked to your choice of a 39-hour rather than 35-hour working week).
- Flexible working arrangements, with the possibility of working from home up to two days a week.
- A sustainable mobility package enabling employers to pay up to a maximum of 500 euros a year to cover the home-to-work travel costs of staff who cycle to work.

HOW TO APPLY ?

To apply, please send your CV and covering letter to   lgicquel@cerfacs.fr , applications are open until 31/03/2025.

See you soon at CERFACS!

30/01/2025