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367_21_CASE_PNM_R3

Job Reference

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Position

Postdoc Researcher - Exascale algorithms for combustion simulations (R3)

Data de tancament

Dimarts, 30 Novembre, 2021
Reference: 367_21_CASE_PNM_R3
Job title: Postdoc Researcher - Exascale algorithms for combustion simulations (R3)

About BSC

The Barcelona Supercomputing Center - Centro Nacional de Supercomputación (BSC-CNS) is the leading supercomputing center in Spain. It houses MareNostrum, one of the most powerful supercomputers in Europe, and is a hosting member of the PRACE European distributed supercomputing infrastructure. The mission of BSC is to research, develop and manage information technologies in order to facilitate scientific progress. BSC combines HPC service provision and R&D into both computer and computational science (life, earth and engineering sciences) under one roof, and currently has over 700 staff from 49 countries.

Look at the BSC experience:
BSC-CNS YouTube Channel
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Context And Mission

Simulation of combustion systems on real applications such as engines or gas-turblines is an exceptionally computationally demanding problem. Access to cutting-edge supercomputers opens new frontiers in combustion simulation and encourages a revision of models and methodologies to harness upcoming Exascale machines' full potential. This is one of the main objectives of the Center of Excellence in Combustion (CoEC) - the European H2020 project gathering major players in HPC and Combustion Simulation - and this is the framework where this postdoc will be developed.

The postdoc will be focused on the optimization of a computational framework to conduct high-fidelity simulation of spray flames. The numerical framework that has been developed includes the solution of particle transport in Eulerian-Lagrangian (E-L) and Eulerian-Eulerian (E-E) frameworks, dynamic load balancing optimizations for E-E and E-L frameworks, and efficient algorithms for error estimators for
dynamic mesh adaptation. The parallel efficiency of such method includes the solution of significant problems such as load balancing of E-L and E-E frameworks, utilization of heterogeneous systems with GPUs and overall scalability on large number of computing nodes.

The applicant will be involved with the High-Performance Computational Mechanics and the Propulsion Technologies Groups from the CASE Department of BSC. A multidisciplinary team with more than 30 researchers from various disciplines such as Engineering, Physics, Mathematics, or Computer Science, with a strong background on Computational Fluid Dynamics (CFD). The team is involved in numerous European research-oriented and industrial projects and disseminates its research on highly ranked scientific journals.

**Key Duties**

- To optimize algorithm
- To carry out performance analysis
- To document the progress

**Requirements**

- **Education**
  - Postdoc in Aeronautics, Mechanical Engineering, Physics, Mathematics or Computer Science with general knowledge on Fluid Mechanics

- **Essential Knowledge and Professional Experience**
  - MPI, OpenMP
  - Fortran2008
  - Heterogeneous computing
  - 2-years postdoc

- **Competences**
  - Problem-solving, pro-active, result-oriented work attitude
  - Good communication skills

**Conditions**

- The position will be located at BSC within the CASE Department
- We offer a full-time contract, a good working environment, a highly stimulating environment with state-of-the-art infrastructure, flexible working hours, extensive training plan, tickets restaurant, private health insurance, fully support to the relocation procedures
- Duration: Temporary - 4 months renewable
- Salary: we offer a competitive salary commensurate with the qualifications and experience of the candidate and according to the cost of living in Barcelona
- Starting date: 01/12/2021
Applications procedure and process

All applications must be made through BSC website and contain:

- A full CV in English including contact details
- A Cover Letter with a statement of interest in English, including two contacts for further references - Applications without this document will not be considered

In accordance with the OTM-R principles, a gender-balanced recruitment panel is formed for every vacancy at the beginning of the process. After reviewing the content of the applications, the panel will start the interviews, with at least one technical and one administrative interview. A profile questionnaire as well as a technical exercise may be required during the process.

The panel will make a final decision and all candidates who had contacts with them will receive a feedback with details on the acceptance of rejection of their profile.

For more information follow this link

Deadline

The vacancy will remain open until suitable candidate has been hired. Applications will be regularly reviewed and potential candidates will be contacted.

OTM-R principles for selection processes

BSC-CNS is committed to the principles of the Code of Conduct for the Recruitment of Researchers of the European Commission and the Open, Transparent and Merit-based Recruitment principles (OTM-R). This is applied for any potential candidate in all our processes, for example by creating gender-balanced recruitment panels and recognizing career breaks etc.
BSC-CNS is an equal opportunity employer committed to diversity and inclusion. We are pleased to consider all qualified applicants for employment without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, disability or any other basis protected by applicable state or local law.
For more information follow this link
Barcelona Supercomputing Center - Centro Nacional de Supercomputación

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