351_19_CASE_HPCM_RE1

Job Reference

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Position

Postdoctoral Researcher on Numerical simulations of reacting multiphase flows (R2)

Data de tancament

Divendres, 31 Gener, 2020

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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 650 staff from 49 countries.

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Context And Mission

The research project for this application is devoted to the generation of predictive tools for combustion simulations in order to optimize fuel design and fuel performance towards more sustainable and cleaner propulsion systems. This will mean bringing together state of the art technologies with current and future fuel requirements within the framework of exascale simulations of gas turbine and internal combustion engines. The results will help to provide further understanding of the most relevant fuel properties in order to achieve both, best performance and minimal environmental impact. Special attention will be put on biofuels, due to their remarkable role on the sustainability of the transportation sector. The project includes a combined theoretical, numerical and experimental comprehensive study in order to obtain further comprehension of the phenomena.
Key Duties

- The candidate will be dedicated to the development of a multiphase flow solver based on Eulerian and Lagrangian descriptions of the multiphase flow in the context of LES. In particular, the main activities of the applicant will be focused on the development a methodology to simulate primary and secondary atomization at relevant conditions for engine operation including vaporization and coupling with the combustion model. The work includes the development and application of a Eulerian and Lagrangian description of the multiphase flow at atmospheric and high-pressure conditions. Transition Eulerian – Lagrangian for dense and dilute parts of the spray will be one of the major focus of the activities. Both solvers are already available and the applicant will be working on the coupling of the two using physical constrains.

Requirements

- Education
  - The candidate should hold a PhD in Aerospace, Aeronautics or Mechanical Engineering degree with concentration on turbulence and multiphase flows. General knowledge on fluid mechanics, LES, numerical methods, interface tracking (volume of fluid, level set, …) is expected. Computational skills and parallel programming for HPC are not necessary, but will be considered an asset.

- Essential Knowledge and Professional Experience
  - The candidate should have 0-2 years of postdoctoral experience

- Competences
  - The offered position is a Junior Postdoctoral position for two years to contribute to the development and application of a Eulerian/Lagrangian multiphase approach to predict the multiphase flow in reacting sprays.

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 - 2 years 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: 01/04/2020
Applications Procedure

All applications must include:

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

Deadline

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

Diversity and Equal Opportunity Employment

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.

This position is reserved for candidates who meet the requirements and have the legal status of disabled persons with a degree of disability equal to or greater than 33%. In case there are no applicants with disabilities that meet the requirements, the rest of the candidates without declared disability will be evaluated.

Barcelona Supercomputing Center - Centro Nacional de Supercomputación

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