Research Fellowship in Aerothermodynamics

Directorate of Technical and Quality Management

ESTEC, Noordwijk, The Netherlands

ESA/RF-ESTEC(2015)019

Overview of the Division's mission

The Propulsion and Aerothermodynamics Division is responsible for project support and technology development for space application for all what concerns propulsion for spacecraft and launchers (essentially chemical and electric, but more advanced propulsion concepts investigated) and aerothermodynamics (tools, including experimental, numerical and physical modeling for internal and external flows applicable to re-entry, launchers and propulsion systems). The Division is supported by a propulsion laboratory (activities in electric and chemical propulsion) and a computational facility.

Overview of the field of research proposed

The Computational Fluid Dynamic codes used at ESTEC need to be constantly validated based upon available experimental databases. Where needed, the incorporated engineering models need to be extended and should address different phenomena such as turbulence, transition, chemical reaction.... Eventually, instability theories might need to be worked out to better describe the effect of various instationary flow phenomena. Eventually the coupling of different codes need to be addressed allowing multi-disciplinary simulations such as fluid-structure interaction, conjugate heat transfer...

The candidates need to have a good experience on numerical discretization schemes, analytical description of engineering models, showing experience in implementing dynamic systems into numerical codes and integrate them into the tools used at ESTEC for high-speed flow and turbulent combustion simulations. Having a dedicated know-how of computational fluid dynamic codes for high-speed, meshing three-dimensional complex geometries and treating very large data-sets stemming e.g. from large eddy simulations is a prerequisite. For the multi-disciplinary aspects, experience in structural and/or thermal modelling needs to be shown.

Who can apply

The programme is open to suitably qualified women and men. Preference will be given to applications submitted by candidates within five years of receiving their PhD.

The Research Fellow Programme is open to nationals of the following states: Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, and the UK, or Canada as a Cooperating State, Bulgaria, Estonia, Hungary, Latvia, Slovakia and Slovenia as European Cooperating States (ECS).

Required qualifications

Applicants must have recently completed their PhD studies in transition of hypersonic boundary layers.

Applicants should have good analytical and communication skills and should be able to work in a multi-cultural environment in an autonomous manner.

Applicants must be fluent in English and/or French, the working languages of the Agency. A good proficiency in English is required.

How to Apply

Please fill in the online application form attaching to it, **in one document only,** your CV, your motivation letter and your research proposal.

Candidates must also arrange for up to **three letters of reference** to be sent by e-mail, before the deadline, to **temp.htr@esa.int**. The letters must be sent by the referees themselves. The candidate's name must be mentioned in the subject of the email.

Applications satisfying the general conditions for eligibility, to be submitted **by 6 May 2015**, will be evaluated and successful applicants will be invited for an interview.

Interested candidates are highly encouraged to visit the ESA website: www.esa.int.