

## Vacancy Notice

### **Internal Research Fellow (post-doc) in Computer Science & Applied Mathematics**

The European Space Agency's Advanced Concepts Team ([www.esa.int/act](http://www.esa.int/act)) is looking for highly motivated young researchers in the field of Computer Science & Applied Mathematics, with good analytical and communicational skills and an excellent aptitude for interdisciplinary teamwork.

#### **The Team**

The Advanced Concepts Team (ACT) is a group of research fellows (post-docs) and young graduates who originate from a broad variety of academic fields and aim at an academic career. Its task is to monitor, perform and foster research on advanced space systems, innovative concepts and working methods. It interacts externally almost exclusively with academia and operates as a truly interdisciplinary team bound to high scientific standards. Via its research, the team acts as a cross-departmental pathfinder to explore novel, potentially promising areas for ESA and the space sector, ranging from applied to basic fundamental research topics. The team is in constant evolution and attempts to lead and embrace changes and new trends. Each member is therefore encouraged and expected to contribute to and suggest changes to its research orientation and even internal functioning.

An important task of the team is to communicate scientific trends and results, as input to the strategic planning of the Agency.

The team has entered the field of computer science and applied mathematics in 2004, performing research projects related to distributed-parallel-GPU computing (see the [PyGMO/PaGMO](#) project), interval arithmetic, fast computer algebra (see the [Piranha](#) project) and, in general, high performance scientific computing. Expertise in one or more of these areas is an asset. The open science approach has been pursued in all these researches and is indeed considered a valuable paradigm to perform successful research within the team and propose different approaches for other Agency's projects. The candidate is encouraged to propose and initiate new research areas in the field of computer science and applied mathematics based on her/his own research background and interest and in line with the objectives of the team.

The successful candidate will work in a team of scientists and engineers having diverse backgrounds ranging from physics to economy and will define and shape her/his research together with the team drawing from his or her own insight and analysis.

#### **Duties and tasks**

Successful candidates will carry out research in computer science and applied mathematics and will, in particular, carry out the following tasks:

- Propose and perform high-level research in the field of computer science and applied mathematics both within the team and together with universities of ESA member states (in particular through the Ariadna programme)

- Publish results in peer-reviewed publications and use modern communication tools to communicate with a broader community inside and outside ESA
- Lead and contribute to interdisciplinary research projects
- Monitor relevant science and technology trends (outside and inside the space sector), and provide summarizing reports both by own initiative and upon dedicated request
- Lead and assist interdisciplinary projects with other ACT Research Fellows and Young Graduate Trainees.
- Perform and participate in studies on subjects of strategic interest to provide in-house expertise to internal strategy development activities and the ESA General Studies Programme.
- Follow and monitor research in the area of computer science and applied mathematics and in particular results of potential interest to ESA, the space sector and the team in order to derive and report strategic trends.

Areas of research are partly chosen by the successful candidate based on his/her own expert judgements and insight into trends and developments, partly chosen by the team as to follow strategic directions of the Agency.

### **Qualifications**

The candidate should hold a degree in either mathematics, computer science, informatics, engineering or a related field. She or he should also have completed (or be about to complete) a PhD in computer science, mathematics or informatics, with the subject of the thesis relevant to the task description above. The applicant should aim at an academic/research career. Solid programming skills in C++ and python are mandatory. Experiences in open source projects, GPU programming, distributed computing and cloud computing are considered strong assets.

The candidate is expected to bring to the team a broad knowledge of computer science fields and communities. The candidate should demonstrate an interest in space science and / or technology as well as the ability and interest to get actively involved in prospective interdisciplinary research.

Successful candidates are expected to show an aptitude to put their areas of research into a broader context, to quickly assess the potential of research ideas with respect to other scientific domains and (space-) applications and to be able to communicate their research to peers and superiors with completely different scientific and professional background. An avid, natural curiosity and a passion for new subjects and research areas are essential. As member of an interdisciplinary, multicultural team of peers, the candidate should have a natural aptitude to teamwork, while being able to set-up, follow, monitor and be responsible for his/her own personal research plans and directions. Good methodological and organisation skills are therefore a valuable asset.

### **Application**

Information on the ESA Research Fellowship Programme and the application form are available at: [www.esa.int/SPECIALS/Careers\\_at\\_ESA/SEM19DXO4HD\\_0.html](http://www.esa.int/SPECIALS/Careers_at_ESA/SEM19DXO4HD_0.html). Applicants should send their CV, a covering letter stating their research interests and the filled-out RF application form to: [act@esa.int](mailto:act@esa.int) as well as [temp.htr@esa.int](mailto:temp.htr@esa.int). (if not possible by email, the reference letters can also be sent via normal mail to: ESTEC

HR Division, HFI-HTR, ESA/ESTEC; Keplerlaan 1, PO Box 299, 2200AG Noordwijk ZH, The Netherlands).

The general eligibility criteria of the ESA Research (Internal) Fellowship Programme apply.

All applications will be considered until the available post is filled. A first round of interviews is expected to take place in December 2011/January 2011, with the option of screening interviews via videoconference; to enter this call it is recommended to submit applications no later than **November 21, 2011**.

Interested candidates are highly encouraged to visit the teams website: [www.esa.int/act](http://www.esa.int/act) as well as: [www.esa.int](http://www.esa.int).