Vacancy Notice

Internal Research Fellow (post-doc) in Advanced Renewable Energy Systems and Wireless Power Transmission

The European Space Agency's Advanced Concepts Team (www.esa.int/act) is looking for a highly motivated young researcher in the field of advanced renewable energy systems, with good analytical and communicational skills and an excellent aptitude for 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. The team's 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 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 suggest and contribute changes also in the team.

Internally, the Advanced Concepts Team acts as the technical think-tank within Future Preparation and Strategic Studies Office. Thus, an important task of the team is to communicate scientific trends and results, as input to the strategic planning of the Agency.

In the specific field of advanced energy systems, the team has been active since a number of years, including research on the comparison of space and terrestrial solar energy plant options, wireless power transmission for space exploration purposes, modelling, simulations and experiments to deploy very large structures in microgravity as predecessors for microwave antennas (e.g. *Furoshiki* and *Suaineadh* experiments), hydrogen storage, reversible bio-fuel cells and the potential of space assets in managing smart energy grids based on a large percentage of renewable energy sources (e.g. space4energy.org). Further information is available on the website of the team under: www.esa.int/act

Duties and tasks

Successful candidates will carry out research in advanced renewable energy systems and will in particular carry out the following tasks (details and emphasis between tasks to be agreed):

- Propose and perform research in the field of advanced energy systems, independently and together with universities of ESA member States (in particular through the *Ariadna* programme)
- Propose and perform research in the field of wireless power transmission, independently and together with universities of ESA member States (in particular through the *Ariadna* programme)

- Assess and investigate newly proposed concepts and systems in the field of renewable energy systems and especially potential space components via computer models, analysis and simulations.
- Perform research on, mature and investigate the concepts of solar power from space and their optimal integration into terrestrial solar energy systems for a 2025 time frame (the integration into concepts such as those described in the frame of DESERTEC and into energy intense sectors such water treatment, desalination and recycling should form part of such an assessment).
- Perform system level research on space components for terrestrial energy systems for the 2015+ timeframe (e.g. smart electricity grids), including non-technical parameters.
- Publish results in peer-reviewed publications and additionally use modern communication tools to communicate with broader audience inside and outside ESA
- Lead and assist interdisciplinary projects with other ACT Research Fellows.
- Participate, with the rest of the team, in the assessment of proposed space system concepts - these not being restricted only to the advanced energy systems - and propose new concepts and assessment studies.
- Perform and participate in studies on subjects of strategic interest to provide in-house expertise.
- Follow and monitor the progress of research in areas of advanced energy research of interest to 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 physics, mathematics, informatics or engineering. He or she should also have completed (or be about to complete) a PhD in physics or engineering, subject of the thesis being relevant to the description of the tasks outlined above and aim at an academic/research career.

The candidate is expected to bring to the team functioning links to universities and research institutes. 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.

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

Successful candidates are expected to show an aptitude to contextualise specialised areas of research and to quickly assess their potential with respect to other domains and applications. 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: http://www.esa.int/SPECIALS/Careers_at_ESA/SEMICLRTJRG_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 as well as 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. Application deadline for this round of interviews: no later than January 9, 2013. Typically the interview process will include a pre-interview by videoconference/skype, a short presentation of a research proposal in a seminar type setting with the current team present and a classical face-to-face interview.

To prepare for the interview please visit: ESA: www.esa.int, the Advanced Concepts Team: www.esa.int/act, read the publications about the team on the publications page (http://www.esa.int/gsp/ACT/publications/index.htm) or in case of questions, send us an email to: act@esa.int