Traineeship Opportunity for "Young Graduate Trainees"

Reference	Specialist Area	Duty Station	Closing Date
ESA/YG-ESTEC(2014)042	**Advanced Concepts for Space Architecture and Infrastructure**	**ESTEC**	**14 December 2014**

Overview of the Division's mission

Within the European Space Agency, the Advanced Concepts Team (ACT) is engaging in collaborative research relations with university institutes and research centres, focusing on advanced research topics of potential strategic interest to the space sector and in experimenting with new forms of teamwork. In order to achieve this goal a multidisciplinary research environment is provided, in which young scientific and engineering post-doctoral and post-graduate researchers carry out work on emerging technologies and innovative concepts. Candidates are strongly encouraged to visit the website of the team to obtain more information about the team: http://www.esa.int/gsp/ACT/index.html.

Overview of the field of activity proposed

Since the early years of space exploration, studies discussed the possibility of building liveable space habitats and very large space structures. Those early visions and designs did not materialise into space projects. They involved the orbital deployment of typically heavy infrastructures, which was only credible in a scenario of exponential increase of launching capacities. Fifty years later not much progress has been made in terms of launch capabilities, but space activities and especially space exploitation have evolved considerably. At the same time, manufacturing techniques are changing and advancing at a considerable peace. The first 3D printed houses have been produced and a new generation of highly innovative 'intelligent' buildings are high on public research agendas (e.g. European Commission in the framework of the Horizon/2020 programme). Such new technology developments are merging with modern architectural design with the aim to provide novel infrastructural components. The possibility of extracting materials directly form planetary surface (In-Situ Resource Utilisation) is also subject of vivid discussions and adds to the new opportunities available for space infrastructure, including habitats.

The successful candidate will review the current state of the art in the field and recent concepts proposed on advanced space infrastructure, constructing a taxonomy of approaches, techniques, ideas and designs and their evolution with available technologies. She/He will then focus on a few designs of his/her own and study its specificities in terms of manufacturing, sustainability and cost.

Depending on the nature of the project, this might also involve interfacing with the academic community in these fields. The successful candidate will be a member of the Advanced Concepts Team (http://www.esa.int/gsp/ACT/index.html) and therefore expected to contribute to the development and the assessment of new concepts and technologies for space applications in close interaction with ACT researchers who work on a broad range of disciplines including, informatics, artificial intelligence, climate modelling, energy systems, fundamental physics, biomimetics, computational management science and mission analysis. Based on her/his detailed background and interests and the opportunities and needs of the team, the successful candidate will be involved in a number of other ACT initiatives (including studies conducted via the Ariadna scheme, http://www.esa.int/gsp/ACT/ariadna/index.html) and participate in reporting and communicating results of the team (internally and externally).

Educational and other requirements

Applicants should have just completed, or be in their final year of a University course at Masters Level (or equivalent) in architecture, civil engineering, material sciences or related. Demonstrated interest in space architecture is considered an asset.

Applicants should show a genuine interest in applied academic research, together with sound analytical skills, avid curiosity and a natural aptitude to self-motivation . Applicants should have good interpersonal and communication skills and should be able to work in a multi-cultural environment, both independently and as part of a team.

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

How can I apply?

Please fill in the online application form.
Please note that only one application may be submitted for the YGT Scheme.

The YGT Scheme is open to recently qualified young men and women
who are nationals of one 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, Estonia, Hungary, Latvia and Slovenia as European Cooperating States (ECS).