| Aufgabe und Aktivitäten |
|---|
| Applicants are invited to work with the optimisation department of Airbus Defence and Space GmbH in Manching (Germany) and the Composite Research Group (Prof. Arthur Jones) of the University of Nottingham as part of of the European industrial doctorate for efficient multidisciplinary design Optimization of Multifunctional Aerospace Composite Structures - "OptiMACS".<br>OptiMACS project is a European Training Network (ETN) funded by the European Union's Horizon 2020 Marie Skłodowska-Curie Actions Programme. Successful applicants will register for a PhD programme at the University of Nottingham.<br><br>Modern aeronautical structures are increasingly made of composite layered materials. The usage of composite structures however implies a radical increase of the structural design parameters that have to be determined and optimized for an aircraft during its design process. There is therefore a genuine industrial need for developing advanced computational schemes and optimization processes, able to reliably provide the optimal design of the composite structure under consideration.<br><br>The successful applicant is expected to build on advanced computational models to predict and to optimise the multidisciplinary (static, weight, dynamic etc.) performance of complex aerospace components. These may include the effect of dynamic loading on the response of composite materials, the developments of models across different length and time scales and the study of the effect of triaxiality in fibre-dominated failure modes.<br><br>Multidisciplinary Optimization for aerospace composites needs to be done by taking into account several thousands of design variables. This is nowadays performed through gradient based, continuous optimization algorithms, resulting in an optimal design comprising an infinite number of plies, which cannot be manufactured directly (i.e. the results have to be post-processed in order to derive lay-ups with a discrete number of plies from the non-discrete optimization results.). The candidate will work on this subject by investigating and developing continuous as well as discrete optimization schemes for determining the optimal design of each individual ply in the laminate (i.e. number of plies, sequence, thicknesses and mechanical characteristics)<br><br>The PhD work will combine substantial theoretical and computational developments together with experimental tasks.<br><br>- The successful applicant will work 36 months on the OptiMACS project<br>- Candidates will spend about half of the time at Airbus Defence and Space GmbH in Manching (Germany) and the other half at the University of Nottingham (United Kingdom) and must be willing to travel within Europe<br>- Candidates must hold a first class master's degree in mechanical/aerospace engineering, applied mathematics/physics, or a relevant discipline and have a solid background in composite structures and computational modelling<br>- Excellent written and verbal communication skills are also essential<br>- Fluency in English (written and spoken) is required<br>- At the time of the recruitment the researcher must be in the first four years (full-time equivalent research experience) of their research careers and have not been awarded a doctoral degree<br>- Mobility Rule: At the time of the recruitment researchers shall not have resided or carried out their main activity (work, studies, etc.) in Germany for more than 12 months in the 3 years immediately prior to the appointment (compulsory national service, short stays such as holidays, and time spent as part of a procedure for obtaining refugee status under the Geneva Convention are not taken into account)<br>- Candidates will also be required to meet the Marie Skłodowska-Curie Early Stage Researcher eligibility criteria: (http://ec.europa.eu/research/participants/data/ref/h2020/wp/2016_2017/main/h2020-wp1617-msca_en.pdf)<br>- Practical experience in software design and development is required<br>- Programming languages: FORTRAN95/2003, C/C++, Python<br>- Experience with numerical simulations<br>- Experience with mathematical optimization<br>- Experience with Composite materials and structures |
| Detaillierte Kompetenzen (inkl. Fertigkeiten) |
| Details zur Stellenbeschreibung (Arbeitsort, Berufsgruppe, Programm, Schicht & Arbeitszeit...) |

**Bezahlungsinformationen**

| Band / Level | |
|---|---|
| Gehaltsbandbreite | Eingruppierung<br>Doktorandenvergütung |

# Ausbildungsanforderungen

| Ausbildungsanforderungen | Fachrichtung | Fach |
|---|---|---|
| Studium von 5 Jahren und mehr | Ingenieurwesen / Luft- und Raumfahrttechnik | |

# Stellenanforderungen - Qualifikationen

## 04-Sprachen

| Erfahrung | Berufserfahrung |
|---|---|