

Candidate Information

Position:	Research Fellow - VALIANT (Modelling Methods for Structural Analysis)
School/Department:	Mechanical & Manufacturing Engineering
Reference:	22/110364
Closing Date:	Monday 21 November 2022
Salary:	£35,333 - £38,592 per annum
Anticipated Interview Date:	Wednesday 7 December 2022
Duration:	18 months

JOB PURPOSE:

To be a highly productive and ambitious member of the Queen's University Belfast and Rolls-Royce collaborative Valiant research project/team. To investigate aeroelastic simulation methods to support structural design for next generation aircraft and engine architectures and technologies. To assist in the development of research proposals and the planning and delivery of the research activity focusing on structural analysis and design for future engine and aircraft concepts.

The post is a critical role, and as such, successful applicants will have responsibilities in independent research, collaborating with the QUB team, and outreach. Direct collaboration with Rolls-Royce will be a key aspect of the role, including regular visits to the company's state of the art facilities in the UK.

MAJOR DUTIES:

1. Undertake research under supervision within the specific research project and as a member of the research team.
2. Design, develop and refine research using a range of aeroelastic and structural models; this includes
 - Carrying out research on aeroelastic and structural simulation methods to understand and quantify the sensitivity of aircraft structural design to new engine concepts and the sensitivity of engine structural design to new aircraft configurations.
 - Developing agile aeroelastic and structural simulation methods (e.g. flutter, aircraft load prediction and structural integrity), demonstrating efficient analysis framework on relevant industrial case studies.
3. Carry out analyses, critical evaluations, and interpretations of experimental data and the literature using methodologies and other techniques appropriate to area of research.
4. Produce high quality research outputs consistent with project aims and commensurate with career stage. This will include collaborating and co-authoring with PI and project team (as appropriate) on outputs.
5. In consultation with the project team, promote research milestones and outputs at national and international conferences.
6. Assist grant holder in the preparation of funding proposals and applications to external bodies.
7. Carry out occasional educational supervision, demonstrating or lecturing duties within the post holder's area of expertise and under the direct guidance of a member of academic staff.
8. Undertake supplementary duties relevant to the success of the project including administrative duties and additional training and development activities as required.

ESSENTIAL CRITERIA:

1. Normally have or be about to obtain a relevant PhD in Engineering, Science or related discipline, or 5 years relevant industrial experience.
2. 2:1 or higher degree in Aerospace Engineering, Mechanical Engineering or related science.
3. At least 3 years relevant research/industrial experience to include:
 - Demonstrable experience in the use of Aeroelastic Analysis for the design, optimisation or verification of aerospace structures.
 - Demonstrable experience in programming/scripting, beyond that taught in undergraduate engineering courses.
 - A proven track record of using relevant techniques to carry out analyses, critical evaluations, and interpretations of data as relevant to the research project.
 - Working effectively as part of a research team in the development and promotion of the research theme.

4. Experience of working in an industrial aerospace setting.
5. Ability to contribute to broader management and administrative processes.
6. Contribute to the School's outreach programme by links with industry, community groups etc.
7. Practical problem solving skills, independence of thought and initiative.
8. Ability to assess and organise resources.
9. Ability to communicate complex information in English effectively in oral and written format, including an ability to present at boardroom level.
10. Ability to build relationships to develop internal and external networks.
11. Commitment to continuous professional development.
12. Ability to meet the mobility requirements of the post including willingness to travel to partner facilities on a regular and frequent basis as required by the role.
13. Willingness to undergo a security check which must be passed.

DESIRABLE CRITERIA:

1. Demonstrable experience in:
 - The use of Finite Element Analysis for the design, optimisation or verification of aerospace structures.
 - Automation of aeroelastic simulation methods, or the creation of iterative analysis or optimisation frameworks.
 - Programming/scripting for relevant CAD/CAE software.
 - Working with industry (or in industry) on research programmes.
2. A track record of high quality publications appropriate to stage in career.