



Candidate Information

Position:	Research Fellow - VALIANT (Modelling Methods for Structural Analysis)
School/Department:	Mechanical & Manufacturing Engineering
Reference:	21/109308
Closing Date:	Friday 19 November 2021
Salary:	£34,304 per annum
Anticipated Interview Date:	Wednesday 15 or Friday 17 December 2021
Duration:	18 months

JOB PURPOSE:

To be a highly productive, ambitious and collaborative member of the Queen's University Belfast and Rolls-Royce collaborative Valiant research project/team investigating novel modelling strategies for next generation aircraft and engine structural design. To assist in the development of research proposals and the planning and delivery of the research activity focusing on structural integrity 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 team, and outreach. Direct collaboration with Rolls-Royce will be key aspect of the role with 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 experimental models; this includes
 - Carrying out research on new computational modelling 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 structural simulation methods (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.

Planning and Organising:

1. Plan own day-to day activity within framework of the agreed research programme.
2. Contribute to the planning of research project, reports and publications etc.
3. Assist PI and project team in organising relevant events.

Resource Management Responsibilities:

1. Ensure research resources are used in an effective and efficient manner.
2. Provide guidance, as required, to ensure a safe working environment.

Internal and External Relationships:

1. Liaise on a regular basis with members of the project team.
2. Liaise on a regular basis with project partners, including short term placements at partner sites across the UK.
3. Build contacts with relevant stakeholders to form relationships for future collaboration and project dissemination.

ESSENTIAL CRITERIA:

1. Normally have or be about to obtain a relevant PhD in Engineering, Science or related discipline. (Candidates about to receive their PhD should provide proof that their viva scheduled within one month).
2. 2:1 or higher degree in Aerospace or Mechanical Engineering or related science.
3. At least 3 years relevant research/industrial experience to include;
 - Demonstrable experience in the analysis of aerospace structures, including demonstrable experience in Finite Element Analysis.
 - Demonstrable experience in programming/scripting, beyond that in undergraduate taught modules.
 - 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. Ability to contribute to broader management and administrative processes.
5. Contribute to the School's outreach programme by links with industry, community groups etc.
6. Practical problem solving skills, independence of thought and initiative.
7. Ability to assess and organise resources.
8. Ability to communicate complex information in English effectively in oral and written format, including an ability to present at boardroom level.
9. Ability to build relationships to develop internal and external networks
10. Commitment to continuous professional development.
11. 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.

DESIRABLE CRITERIA:

1. Demonstrable experience in:
 - The prediction of aircraft loads using commercial Finite Element software.
 - Aircraft design.
 - Programming/scripting for relevant CAD/CAE software.
 - (Of) working with industry on research programmes.
2. A track record of high quality publications appropriate to stage in career.