QUB - Mechanical and Aerospace Engineering PhD Project
2019-2020

Title: CAE modelling for novel aircraft and engine integration

Project description:

This PhD project will be carried out within a large research team (including Academics, PhDs and Post-Doctoral Researchers) which conducts exciting and innovative research in collaboration with Rolls-Royce. It will investigate novel computational methods for modelling and assessing the integration of the aircraft engine to the wing.

In the future aero-engine and aircraft will be different than those in service today. While new concepts are emerging all the time, it is not clear which are the most viable vehicle and so it is difficult to predict which will ever make it to market. As new aircraft concepts emerge there is a requirement to understand how they will affect aero-engine performance. A similar requirement exists to understand the affect new aero-engine designs will have on aircraft. Such information is not easily understood using today's aircraft design software tools which are highly constrained for the designs of today. This means it is very time consuming to assess how new designs will perform as computational models have to be constructed from scratch with limited information sets.

This PhD will investigate new highly flexible and computationally efficient methods for modelling the integration of the engine to the aircraft, so that the changes in one can be propagated to the other. Many research questions exist in this area and will require the novel use of Computer-Aided Design, Finite Element Analysis and Computational Fluid Dynamics to answer. If you have an interest in doing a PhD in any of these topics, please come and discuss it with any of the staff below and we will work with you to define a suitable PhD project.

Staff to see: T Robinson (t.robinson@qub.ac.uk); A Murphy (a.murphy@qub.ac.uk); D Nolan (d.nolan@qub.ac.uk); D Quinn (d.quinn@qub.ac.uk); M Geron (m.geron@qub.ac.uk)

Key skills required for the post: Interest in geometric and analysis modelling, interest and aptitude for programming

Key transferable skills that will be developed during the PhD: Project management, Knowledge of Design systems, advanced knowledge of CAD/CAE.

Lead supervisor:	TBD
Other supervisor(s):	
Guaranteed stipend:	Approx. £14,925
Conditional top-up available:	To be discussed
PhD students in the School have the opportunity to apply to be demonstrators on undergraduate modules. Compensation for this can amount to in excess of £2,400 per year.	

Queens University Belfast is a diverse and international institution which is strongly committed to equality and diversity, and to selection on merit. Currently women are under-represented in research positions in the School and accordingly applications from women are particularly welcome.