Optimised Design of Composite Wings combining Aeroelastically Tailored Skins with Curved Internal Structures

**Type of award**  PhD Research Studentship

**Department**  Aerospace Engineering, Fluids and Aerodynamics Research Group

**Scholarship Details**  Minimum £15,285 p.a. subject to eligibility status.

**Duration**  3.5 years

**Eligibility**  Home/EU

**Latest Start Date**  September 2021

**PhD Topic Background/Description**

In partnership with Embraer under the IILF scheme, this new PhD project will explore how to optimize aircraft wing designs through the combination of curvilinear internal structures (spars / ribs and stringers) with tailored skins (both uni-directional and tow-steered). The effect of uncertainties in material properties and the manufacturing process will be considered, developing a robust / reliability based optimisation procedure taking into account structural and aeroelastic constraints. The study will be part of a contribution towards the overall goal of developing new fuel-efficient wing designs that exploit aeroelastic coupling to optimize the aerodynamic shape whilst reducing loads due to turbulence and manoeuvres.

This 3.5 - year research project will be jointly supervised by academic (Prof J E Cooper and Dr A Pirerra from the Dept of Aerospace Engineering) and industrial supervisors from Embraer. It is an excellent opportunity to develop fundamental and industrially relevant research whilst participating in the collaboration between world leading research teams in aeroelasticity and composites at the University of Bristol and a well-known aircraft manufacturer.

**Further Particulars**

**Candidate Requirements**

Applicants must hold/achieve a minimum of a Master’s degree (or international equivalent) in an aerospace or mechanical engineering discipline (or equivalent).

Basic skills and knowledge required:

**Essential:** Solid background in aircraft structures, composites, and aerodynamics. Experience of computer modelling using Matlab, Simulink and Finite Elements.
Desirable: Knowledge in optimisation and CFD.

Scholarship Details
Scholarship covers full UK/EU (EU applicants who have been resident in the UK for 3 years prior to 1 September 2019) PhD tuition fees and a tax-free stipend at the current RCUK rate (£15,285 in 20/21).

To qualify the successful candidate must start before 1 August 2021. A successful candidate may start after this date (up to 30 September 2021) but an EU student may be liable for the difference between home and overseas tuition fees.

Informal enquiries
For questions about the research topic please contact Prof J E Cooper at j.e.cooper@bristol.ac.uk
For questions about eligibility and the application process please contact CAME Postgraduate Research Admissions came-pgr-admissions@bristol.ac.uk

Application Details
To apply for this studentship submit a PhD application using our online application system [www.bristol.ac.uk/pg-howtoapply]

Please ensure that in the Funding section you tick “I would like to be considered for a funding award from the Aerospace Engineering Department” and specify the title of the scholarship in the “other” box below along with the name of the supervisor. Interested candidates should apply as soon as possible.

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