Department of Aeronautics

PH.D. IN MULTIDISCIPLINARY OPTIMIZATION OF VERY FLEXIBLE WINGS

Eligibility:    Restricted to UK nationals and EU residents in the UK.
Deadline:      15 September 2017
Starting Date: From 1 October 2017
Duration:      Fully-funded for 3-years

Applications are invited for a Ph.D. on high-fidelity computational methods for analysis and design optimization of coupled fluid-structure interaction problems. The interest is in synergistic strategies between methods for topology optimization in structural mechanics and aerodynamic shape optimization in fluid dynamics, to achieve extreme performance requirements on very flexible aircraft wings and very large offshore wind-turbine blades. A key challenge in both applications is that linear analysis methods cannot be used on neither the structure nor the fluid subdomains to simplify the coupled simulations and the evaluation of design sensitivities.

This is a computational project at the cutting-edge of fluid-structure interaction modelling and design methods in aerospace engineering that will make extensive use of high-performance computing, advanced methods for algorithmic differentiation, and state-of-the-art open-source software development. Applicants should possess excellent analytical and computational skills and a keen interest in aerospace design. The successful candidate will join the development team at Imperial’s Load Control & Aeroelastics lab (imperial.ac.uk/aeroelastics) of the SU2 package (su2.stanford.edu).

Applications are invited from candidates with (or who are expect to gain) a first-class honours degree or equivalent in Aerospace or Mechanical Engineering. Eligibility is restricted to candidates who are UK nationals and to other EU nationals who have been resident in the UK for at least three years. The PhD is funded for three years by the EPSRC (https://www.epsrc.ac.uk/skills/students).

To learn more about Imperial College, please go to www.imperial.ac.uk/study/pg. Interested applicants please send a full CV, a motivation statement, and contact details of two referees to Dr Rafael Palacios (rpalacio@imperial.ac.uk) in an email with the subject “MDO PhD”.

Imperial College is committed to equality and valuing diversity. We are an Athena Silver SWAN Award winner and a Stonewall Diversity Champion.