**Imperial College London**

**Departments of Aeronautics**

PhD Studentship

Application deadline: until filled.

Start date: October 2024

Predictive Performance Dispersion Model of Satellite Thrusters

Applications are invited for a Ph.D. studentship in the Department of Aeronautics. The successful candidate will have the opportunity of conducting cutting-edge research in the field of spacecraft electric propulsion.

The advent of satellite mega-constellations has prompted the need for improved industrial design methods to cater for the dramatic increase in the number of spacecraft and subsystems that will be produced in the next decade. The purpose of this PhD activity is to develop a model to predict the performance of spacecraft thrusters given a range of parametric uncertainties inherent in their production. The impact of the resulting performance deviation on the satellite platform and overall mission could therefore be assessed, and suitable ranges of critical manufacturing parameters and tolerances could be defined to aid the inspection and integration of industrially produced thruster units.

The overall objectives of the PhD will be to:

1. Research statistical methods and industrial production theory to develop a generic approach to the problem.
2. Compile a comprehensive list of manufacturing parameters, material properties and tolerances that can influence the performance of the thruster unit.
3. Develop a statistical model, based on first principles physics, to predict the performance of the thruster unit given a set of parametric inputs.
4. Validate the predictive performance model through detailed simulations and experimental data coming from real thruster acceptance testing.

The successful PhD candidate will further be expected to present their findings at major international conferences and submit publications to refereed journals.

Applicants should have a strong background in aerospace engineering or physics. The applicants should also have a proven aptitude for practical research work. Applications are invited from candidates who possess (or expect to gain) a first-class honours MEng or higher degree (or equivalent) in Aerospace Engineering, Aeronautical Engineering, Mechanical Engineering, Electronic Engineering, Physics, or related areas.

Imperial College is consistently ranked as one of top universities in the world and top 3 universities within the UK. In 2019/20 Imperial ranked 9th in the world in the QS and 10th in the world in the THE rankings. It has been ranked as the most innovative university in Europe.

**This studentship is available to students eligible for home fees.**

**Information on fee status can be found at** [**https://www.imperial.ac.uk/study/pg/fees-and-funding/tuition-fees/fee-status/**](https://www.imperial.ac.uk/study/pg/fees-and-funding/tuition-fees/fee-status/)

**The studentship is for 3.5 years and will provide full coverage of tuition fees and an annual tax-free stipend of £20,622.**

Please address any initial informal enquiries you may have to Dr. Aaron Knoll, a.knoll@imperial.ac.uk.

For queries regarding the application process, please contact Lisa Kelly at l.kelly@imperial.ac.uk

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