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Department of Aeronautics

**PhD Studentship IN**

**Modelling and Observation of Aircraft Condensation Trails**

**(REF: ae0051)**

**Supervisor:** Dr Sebastian Eastham  
**Application deadline:** 8th August 2024  
**Start date:** January 2025 (flexible)

The Brahmal Vasudevan Institute for Sustainable Aviation seeks a motivated, quantitative student for a new PhD opportunity in the modelling and observation of aircraft condensation trails (contrails).

Contrails, the thin clouds which form in aircraft exhaust, are currently thought to be responsible for between roughly 1/3 and 2/3 of aviation's overall contribution to climate change. However, this is subject to significant uncertainty regarding their early properties, long-term evolution, and eventual fate. By bringing together state-of-the-science modelling and observation techniques we expect that this project will substantially advance our understanding of how contrails form and evolve, and therefore how one of the largest potential contributors to aviation's climate impacts can be addressed. The student will be working with three members of faculty: Prof. George Papadakis on modelling the turbulent early plume behind an aircraft; Dr. Sebastian Eastham on modelling the long-term development of a contrail during the mature plume stage; and Dr. Ed Gryspeerdt on evaluating and interpreting the model's results against radar, satellite, and ground camera imagery of contrails.

Applications are invited from candidates who possess (or expect to gain) a Master’s degree or equivalent in Aeronautics, Mechanical Engineering, Computing, Physics or related areas. In particular, we invite applications from all interested candidates who have a strong mathematical background with an interest in modelling. A background in or experience with atmospheric science is desirable but not essential. Upon completion of this work, the student can expect to have developed expertise in uncertainty quantification and propagation, numerical modelling of aircraft exhaust plumes, ice cloud physics, and climate science.

**Funding**

This studentship is available to students eligible for home fees.

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

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/). To learn more about Imperial College, please go to [www.imperial.ac.uk/study/pg](http://www.imperial.ac.uk/study/pg).

To apply for these fully-funded studentships please go to: <https://www.imperial.ac.uk/study/apply/postgraduate-doctoral/application-process/> and indicate in your application the reference code for the project. Please address your application to Department of Aeronautics.

For further inquiries, contact the project lead Dr. Sebastian Eastham (s.eastham@imperial.ac.uk).

*Imperial College is committed to equality and valuing diversity. We are also an Athena SWAN Silver Award winner, a Stonewall Diversity Champion, a Disability Confident Employer and are working in partnership with GIRES to promote respect for trans people.*