Newcastle University PhD Studentship award

Title
PhD project in Experimental Fluid Dynamics

Value of award
A tax-free stipend of £14,777 per year (subject to minor change) and 100% UK tuition fees. We will consider covering the EU/international fees for outstanding students and where possible.

Number of awards
1

Start date and duration
September/October 2019 for 3.5 years

Application closing date
31st January 2019

Overview
The PhD research project will investigate the fluid dynamics of internal solitary waves (ISWs) in ice-covered waters. ISWs propagate along density interfaces within stably-stratified fluids. They are ubiquitous in the ocean and their properties are influenced strongly by the nature and form of the upper and lower bounding surfaces of the containing basin(s) in which they propagate. As the Arctic Ocean evolves to a seasonally more ice-free state, the ISW field will be affected by the change. A better understanding of ISW dynamics in the Arctic Ocean and, in particular, how the ISW field is affected by changes in both ice cover and stratification, is central in understanding how the rapidly changing Arctic will adapt to climate change. In this project, the fluid dynamics of ISWs propagating under varying surface conditions will be studied through laboratory experiments. The PhD student will be trained in the generation, visualisation and measurement of ISWs in a new, purpose-built wave flume. In addition, there will be opportunities for the candidate to undertake (i) numerical simulation of the flow (in collaboration with Prof D G Dritschel, St Andrews University) and/or (ii) field work in the Arctic (in collaboration with Prof Tom Rippeth, Bangor University). We are looking, therefore, for a student with a strong interest in both experimental and computational methods, and who has a desire to work across disciplines.

The successful applicant will join the Astrophysical & Geophysical Research Group in Applied Mathematics. In the REF2014 exercise, the School was ranked 11th place.
in the UK by GPA and 10th on publications, placing us in the top quartile for Mathematical Sciences.

**Sponsor**
EPSRC/School of Mathematics, Statistics and Physics

**Name of supervisor(s)**
Dr Magda Carr

**Eligibility Criteria**
This studentship is available to candidates who have/expect a first class or high 2:1 honours degree in mathematics, physics, engineering or a closely related discipline. Enthusiasm for research, an ability to think and work independently, excellent analytical skills and strong verbal and written communication skills are essential requirements. Some knowledge of fluid dynamics and an interest in experimental work are desirable. Applicants whose first language is not English require a minimum of IELTS 6.5.

**How to apply**
You must apply through the University’s online [postgraduate application system](#). To do this please ‘Create a new account’.

All relevant fields marked with a red asterisk must to be completed. The following information will help us to process your application. You will need to:

- insert the programme code **8080F** in the programme of study section
- select ‘**PhD Mathematics – Applied Mathematics**’ as the programme of study
- insert the studentship code **MSP010** in the studentship/partnership reference field
- attach a covering letter and CV. The covering letter must state the title of the studentship, quote reference code **MSP010** and state how your interests and experience relate to the project
- attach degree transcripts and certificates and, if English is not your first language, a copy of your English language qualifications

**Contact**
Dr Magda Carr (magda.carr@newcastle.ac.uk)