PhD Studentship in modelling techniques for ultrasound in fluids and fluid-solid interactions

Applications are invited for a research studentship in the field of ultrasonic modelling leading to the award of a PhD degree. The post is supported by a bursary (minimum £18k tax free) and fees (at the UK/EU student rate) and covers all costs including cutting-edge computational capabilities, visits to international conferences, generous equipment funding etc.

The project will be based in the Non-Destructive Testing (NDT) group in the Department of Mechanical Engineering; the successful candidate will also work with the Department of Mathematics. The NDT group has an excellent record in fundamental and applied research, from the theoretical foundations through to technology transfer to industry. It is well funded by many industrial partners and public grant bodies and has a world-renowned reputation.

Many scenarios, in NDT and elsewhere, involve the propagation of mechanical waves within fluids, either entirely, or in a combination of fluids and solids. Examples of this include NDT immersion tests, where a water bath is used as a coupling medium between an ultrasonic transducer and a solid object to be inspected, guided waves in fluid filled pipes, sonar interactions with objects underwater, and medical applications where human tissue can behave both like a fluid and a solid. The finite element (FE) method is a powerful tool for simulating ultrasound within solids; the intention of this project is to develop and extend capabilities to acoustic (i.e. fluid) models, to include capabilities for both inviscid (no damping) and viscous fluids. Of particular interest will be the coupling solutions between fluid and solid and developing efficient, lightweight techniques to be implemented in an FE package. The new capabilities will be demonstrated by applications to real target simulation interests, and ultimately the outcomes should be implemented in the Pogo software package (www.pogo.software), developed by the NDT group.

You will be an enthusiastic and self-motivated person who meets the academic requirements for enrolment for the PhD degree at Imperial College London. You will have a 1st class honours degree in engineering, maths or physics. Experience of numerical methods such as finite element or finite difference (particularly for wave fields) is desirable, particularly if work has been done developing and programming such methods. Strong communication skills are also essential.

To find out more about research at Imperial College London in this area, go to: http://www3.imperial.ac.uk/mechanicalengineering

For information on how to apply, go to: http://www.imperial.ac.uk/mechanical-engineering/study/phd/how-to-apply/

For further details of the post contact Dr Huthwaite at p.huthwaite@imperial.ac.uk +44 (0)20 7594 3794. Interested applicants should send an up-to-date curriculum vitae to Dr Huthwaite. Suitable candidates will be required to complete an electronic application form at Imperial College London in order for their qualifications to be addressed by College Registry.

Closing date: until post filled

Imperial Managers lead by example.

Committed to equality and valuing diversity. We are also an Athena SWAN Silver Award winner, a Stonewall Diversity Champion, a Two Ticks Employer, and are working in partnership with GIRES to promote respect for trans people