

Physics PhD Studentship in Metamaterials: Imaging in turbid and opaque media Ref: 1466

Location: Streatham Campus, University of Exeter EX4 4QJ

Primary supervisor: Dr. Jacopo Bertolotti, University of Exeter

Secondary supervisors: Prof Bill Barnes, University of Exeter

The presence of disorder in real media (e.g. biological tissue) scramble the optical signal, and imaging through such materials results in a blurred picture. Often to the point of making it unusable.

Recent developments in wavefront shaping technologies demonstrate that it is possible to retrieve high resolution images through strongly scattering materials. However, these methods are still in their infancy, and a complete understanding of the basic physics behind them is still lacking.

This project is focused on studying the fundamental properties of wave propagation in disordered media and the application of this knowledge to imaging. It will encompass theoretical and numerical modelling of mesoscopic wave multiple scattering, the development of proof-of-principle experiments, and the realization of a working imaging device.

Contact for informal enquiries: Dr. Jacopo Bertolotti (j.bertolotti@exeter.ac.uk)

Application criteria: Applicants should have or expect to achieve at least a 2:1 Honours degree, or equivalent in Physics, Material Sciences or related subjects. The applicant should have experience in working in an optical and/or spectroscopy laboratory. Experience in interferometry, microscopy, laser physics and imaging are all bonuses.

Application deadline: The closing date for applications is midnight on 18 April 2014.

Number of Awards: 1

Value: 3.5-year studentship: Tuition fees and an annual stipend equivalent to current Research Council rates (£13,863 for academic year 2014/15).

Contact: For general enquiries please contact Fiona Ayre at: emps-pgr-ad@exeter.ac.uk

How to Apply: To apply, you must complete the online web form at: <http://www.exeter.ac.uk/postgraduate/money/studentships/application/>

You will be asked to submit some personal details and upload a full CV, covering letter and details of two academic referees. Your covering letter should outline your academic interests, prior research experience and reasons for wishing to undertake this project.