

PhD Studentship in Planetary Science

The Centre for Astrophysics & Planetary Science at the University of Kent in Canterbury offers a fully funded PhD studentship for commencement in September 2012. This position is sponsored by the Southeast Physics Network (SEPnet).

Project Description:

Direct Detections of the Asteroidal YORP Effect from the European Southern Observatory

The YORP effect is a torque that can modify the rotation rates and spin-axis orientations of small asteroids in the solar system. YORP torques are caused by the combined effects of incident solar radiation pressure and the recoil effect from anisotropic emission of thermal photons. Several observed phenomena in asteroidal science indicate that such a torque acts upon the surfaces of asteroids and meteoroids, for which the YORP effect is the only realistic mechanism. Despite its importance, there existed only indirect evidence for the presence of YORP on solar system objects, until recently.

The student will also be involved in a new observational programme at the European Southern Observatory (ESO), led by Dr. Lowry and colleagues. This programme will make use of the 8.2m VLT and the 3.5 NTT observing facilities over the next few years. This ESO Large Programme is designed to survey a large sample of small near-Earth asteroids at optical and thermal-IR wavelengths to detect the YORP effect acting on these bodies, and to determine their likely surface compositions. The ESO programme is a collaboration between the University of Kent, Max Planck Institute for Solar System Research (Germany), Open University (UK), Queen's University Belfast (UK), and NASA's Jet Propulsion Laboratory (California, USA). The prospective student will join the science team and participate fully in the project.

A natural extension of this programme is the study of a newly established group of asteroids known as 'asteroid pairs' (pairs of main-belt asteroids that have similar orbital elements and are thought to have been formed from a single consolidated body disrupted by the YORP effect). The aim is to study these asteroid pairs compositionally, physically and dynamically, to further explore their formation and evolutionary histories.

Additional Details:

The successful candidate will be jointly supervised by Dr. Stephen Lowry (CAPS, Lead Supervisor), Dr Samuel Duddy (CAPS) and Dr. Craig Agnor (Queen Mary

University of London). Funding is available for 3 years for suitably qualified candidates, which includes registration fees and an annual stipend. The stipend will be roughly in line with UK EPSRC studentships (~£14k per year). Limited funds for travel to international conferences and telescope facilities may be made available. This studentship is available to EU residents, and the application window will remain open until February 23rd 2012. Minimum qualifications are normally a first class BSc degree or MSc with Distinction, or the equivalent.

For more detailed information on the project please contact the respective lead supervisor Dr Stephen Lowry directly (s.c.lowry@kent.ac.uk), and for further information on how to apply via the University of Kent online system, please contact Sarah Saunders (spsrecruit@kent.ac.uk). Further details on the University of Kent School of Physical Sciences and SEPnet are available here:

<http://astro.kent.ac.uk/>

<http://www.kent.ac.uk/physical-sciences/>

http://www.sepnet.ac.uk/study/sepnet_2012PhD_studentships.html