Development of the detector array for SXI on SMILE

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Description: In the summer of 2015, the European Space Agency, ESA, announced its first major collaboration with the Shina Academy of Sciences, CAS, with the selection of SMILE – a collaborative mission for rapid development and launch in the 2022 timeframe (short for a major space project!). SMILE will be launched into a highly elliptical orbit to look back at the Earth, and is designed to study the interaction of the solar wind with the Earth’s magnetic field.

On the SMILE spacecraft, the UK leads the Soft X-ray Imager, SXI, which is a unique and ground-breaking instrument which will image the X-ray emission from the solar wind interacting with the bow-shock of the Earth’s magnesosphere. The Open University is leading the design and development of the X-ray imaging focal plane detector at the heart of the telescope. This project will involve close interaction with other scientists within the UK at Leicester and UCL/MSSL, and ESA. However, in addition, the programme will interact very closely with UK industry, with e2v technologies in Chelmsford who will manufacture the X-ray detectors. The development of the X-ray imaging sensors for this exciting new instrument will be highly challenging – not least getting them designed and manufactured, but to survive the harsh environment of space – which ultimately destroys the detectors. The study of space radiation damage will a key challenge during the study programme. In addition, to produce quantified results, understanding the detector and overall instrument calibration will be essential. This will require development of complex models, backed up by measurements at X-ray beamlines in synchrotrons and other test facilities around Europe.

We seek a highly motivated candidate to work within the Centre for Electronic Imaging (www.open.ac.uk/cei) on this project opportunity, with an interest in physics, electronics and space science applications, with a willingness to participate in research and development of leading edge detector technology towards the construction of the SXI instrument onboard the SMILE mission. The successful applicant will work in a dynamic research team consists of several PhD students post-doctoral researchers. Some travel, paid for with the main project funding, to ESA (the Netherlands) and CAS (China) may be required during the programme, to meet with our collaborators and the project engineers with whom the candidate will be working closely.

Qualifications required: A first class or upper second class MSc/BSc degree in Physics, Electronic Engineering or a related discipline.