

## Effects of scattering models on LWR core analyses

A fully paid PhD studentship is offered at the Cambridge University Engineering Department in the area of nuclear reactor core analysis methods development. It is offered under Industrial Cooperative Awards in Science & Technology (iCASE) scheme of the UK Engineering and Physical Sciences Research Council (EPSRC) in collaboration with EDF Energy – the owner and operator of the UK nuclear reactor fleet.

The safety and operational performance of reactor cores relies on simulation tools which are used, with appropriate uncertainties, to set operating limits and determine operational practices on the nuclear fuel and the reactor core. Improved accuracy of tools as well as understanding of their deficiencies can ensure safety margins are appropriately set and allow more flexible and less constrained operation, contributing directly to cost reduction of nuclear power.

Industry standard simulation tools generally use simplified representations of neutron angular scattering. In general, this approach is successful but would be expected to have limitations in areas of strong absorbers or abrupt changes in material properties such as the core-reflector interface. This project seeks to clarify the origins of errors associated with the existing approaches and outline what improvements could be expected from the use of more sophisticated scattering treatment models.

The project is expected to involve a blend of physics model and computer code development, as well as comparison of these models with measured plant data to resolve the questions above.

A successful candidate will have physics or engineering undergraduate degree with strong affinity to computational modelling.

Please contact Prof. Eugene Shwageraus for more details at [es607@cam.ac.uk](mailto:es607@cam.ac.uk)