

Postdoctoral Research Assistant in Mathematics

University of Warwick

“Nonlinear dynamics for stellarator design”

2 years to start in September or October 2018 (subject to contract)

We seek a highly motivated and creative researcher with PhD in dynamical systems theory, preferably Hamiltonian dynamics, for a postdoctoral research project in stellarator design.

The project is to explore the possibilities to make toroidal magnetic confinement devices for plasma that have (nearly) integrable guiding-centre dynamics (to maximise the confinement) and no externally driven current (to minimise associated instabilities and the need for current drive); such devices are called stellarators. The latter condition requires significant deviation from axisymmetry, which would otherwise be the straightforward way of achieving the former and is the principle of the tokamak. Integrability is guaranteed, however, under a condition called quasisymmetry. A first question is to what extent quasisymmetry can be realised by magnetohydrodynamic equilibria without an external current drive.

The position is funded by the Simons Foundation under an international collaboration on “Hidden symmetries and fusion energy”. The Simons Foundation grant will also pay for the postdoc to collaborate with Prof Meiss in Boulder, Colorado, and participate in team collaboration meetings in the USA.

Interested applicants are invited to contact R.S.MacKay@warwick.ac.uk