Topological and skyrmion magnetic materials

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The recent discovery of skyrmions in magnetic materials and of their self organisation into a skyrmion lattice together with their potential use for magnetic storage has made skyrmion physics one of the hottest topics in magnetism research.
A PhD studentship is available starting from October 2023 to work on chiral magnets skyrmionic materials. The materials to be studied include those which have previously been identified to exhibit skyrmionic behaviour, and extend to exploring new materials which may exhibit and other topological magnetic states too. These include besides other materials, magnetic 2D/layered materials, as well as intermetallic and frustrated magnets which have been of great interest of late. The project will make use of a number of experimental techniques to synthesize the crystals and will encompass the study of the crystals produced through detailed investigations of their structural and magnetic properties. The project will involve several collaborations with research groups both within the UK and Internationally. To complement our state of the art in-house experimental facilities, there will also be scope for taking part in experiments at international facilities using neutrons, muons and synchrotron radiation.
The project takes place in the context of a wider programme of materials investigation currently underway within the Superconductivity and Magnetism Group in the University of Warwick. The Superconductivity and Magnetism Group has an international reputation for its long running single crystal growth programme, funded by the EPSRC, UK.

This is a new, exciting and fast moving field and an ideal project for a strong and enthusiastic student.

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