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| **Summer Placement Project Proposal** |
| Supervisor(s): Dr Dharmalingam Prabhakaran  Duration of Placement: 4 July to 23 September 2019  Date restrictions: |
| **Section 1: Project description:**  Project title: Preparation and characterisation of novel topological insulators  Topological insulators represent a new form of quantum matter which is insulating in the bulk but has a metallic surface which is protected by a topological feature in the electron bands. When topological insulators are placed in proximity to other materials, exotic and interesting phenomena are predicted to emerge which could have practical uses.  In this project you will prepare single crystals of a few new potential the topological insulators. The aim is to obtain a new family of topological insulators and study its structural and physical properties. The crystals will be characterised by a range of techniques including X-ray diffraction, magnetic measurements, and electrical and thermal transport. The project is experimental and is a mix of materials preparation and physical measurements. |
| **Section 2: Special requirements (skills and experience required):**  Required skills: Material synthesis and powder X-ray data analysis  Desired skills: Crystal growth and transport measurement |