I am a DPhil student in Peter Norreys' group with a focus on laser-driven particle acceleration. I graduated from the University of Oxford with a degree in physics and began my DPhil in October 2016.

My research is directed towards exploiting the interactions of high power lasers with plasma to accelerate particles to high energy. This involves searching for mechanisms by which particles can be accelerated and then looking at the potential applications of these high energy ions and electrons. This currently is divided into three distinct but related projects: the numerical modelling of electron acceleration by ultra-intense laser pulses to produce coherent bursts of attosecond-duration x-rays, the experimental and numerical investigation of the interactions between protons and light ions with electrostatic shock fronts to attempt to produce monoenergetic ion beams, and the investigation of novel approaches to inertial fusion.

My work involves a mix of computational and experimental work, utilising the SCARF and Archer supercomputers to run large-scale simulations of laser-plasma interactions. I also collaborate with an international team led by the Lawrence Livermore National Laboratory in California, USA, investigating proton acceleration; this involves high power laser experiments at the Central Laser Facility in the UK and the Jupiter Laser and National Ignition Facilities in Livermore.

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