Dr Robert H.H. Scott

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Scott has a permanent position as the radiation-hydrodynamics expert within the Plasma Physics Group, Central Laser Facility, Rutherford Appleton Laboratory (RAL). With particular expertise in laser inertial confinement fusion (ICF), Scott has over 10 years experience designing, performing and simulating ICF experiments. Prior to his PhD, Scott led the project management, design, manufacturing, and commissioning of the £3M target assembly for the £300M ISIS TS2 Neutron Spallation Source at RAL. Leading a team of ~15, this project was delivered on-budget and 6 months early. Scott then undertook a PhD in Plasma Physics at Imperial College London. Studying the topic of fast electron transport in inertial confinement fusion, this combined both experimental and computational work. On completion of his PhD, Scott then worked as an ICF radiation-hydrodynamics designer at the National Ignition Facility (NIF), Lawrence Livermore National Laboratory (LLNL) where he gained direct experience of NIF implosion experiments. Here Scott made key theoretical contributions to the understanding of NIF implosions, which were previously unexplainable. This resulted in the development of new diagnostics, which verified Scott's theoretical predictions. It has resulted in an ongoing campaign on this multi-billion-dollar machine to rectify this issue. The issue Scott identified is still recognised as the key factor limiting NIF's ICF performance. With principal interests in ICF, Scott uses multi-dimensional radiation-hydrodynamics, Particle-in-cell and Monte Carlo techniques to design and analyse laser-plasma experiments.

Scott is the project PI on a 3 year, £1.3M Engineering and Physical Sciences Research Council (EPSRC) grant, "Plasma kinetics, pre-heat, and the emergence of strong shocks in laser fusion: the hydro-kinetic regime". This grant combines new experiments on the Omega laser facility with the development of innovative laser-plasma interaction and hot-electron simulation tools and methodologies. A key outcome will be the encapsulation of the experimental datasets in new 'hydro-kinetic' models within our radiation-magneto-hydrodynamics code. The resulting improved predictive simulation capabilities will be of key importance in determining the viability of the direct-drive and shock ignition approaches to laser fusion over the coming years. This a multi-institution grant, funding RAL (Scott (project lead), Glize), University of York (Prof. N. Woolsey, Antonelli), and the University of Warwick (Prof. T. Arber, Bennett). Furthermore, this work is a cornerstone of a wider international collaboration on shock ignition incorporating the AWE, CELIA (University of Bordeaux), General Atomics, UCSD, and the Laboratory for Laser Energetics, Rochester, USA.

Scott is also the RAL Principal Investigator on the EPSRC grant "CCP Flagship: A radiation-hydrodynamics code for the UK laser-plasma community", and a co-investigator on the Euro-fusion grant "Preparation and Realization of European Shock Ignition Experiments".

Scott has made key contributions to the areas of indirect drive central hotspot ignition and fast electron transport in ICF, with two first author publications in *Physical Review Letters* on these topics [PRL 110, 075001 (2013), PRL 109, 015001 (2012)]. He has twenty-six, first or co-authored papers.

Scott is a member of the Institute of Physics and the American Physical Society. He lives in Oxford, has three children Olive, Rosie and Tom, and enjoys playing football and climbing when allowed by his wife Cathy!

With experience of working both in the UK and US, and a background in both high-intensity laser-plasma interactions and laser fusion, and I would seek to provide the EPS board with a balanced perspective on these aspects of plasma physics. I am a passionate believer in the potential benefits that fusion can bring mankind. Through my involvement in the EPS, I would seek to promote the potential benefits that the 'non-proliferative' direct drive laser fusion schemes offer, and to raise the profile of laser fusion in Europe.