

Institute of Physics

LONDON AND SOUTH EASTERN BRANCH REMS SECTION

**(Rescheduled) Visit to Rutherford Appleton Laboratory, Chilton, Oxfordshire, OX11 0QX
Central Laser Facility, Wednesday 18th May 2005**

This visit has been organised by John Lunn

The Central Laser Facility provides access to large scale laser systems for researchers from the UK and other EU countries. The Facility operates high power glass and Ti:Sapphire laser installations and a number of smaller scale, tuneable lasers. See <http://www.clf.rl.ac.uk/Facilities/Index.htm>

Vulcan is one of the world's leading high power laser facilities offering UK and European researchers a unique facility for ultra-high intensity laser interactions with solids, gases and plasmas. With a combination of 100TW short pulses synchronised with 2.6kJ multi-beam nanosecond pulses it offers researchers the opportunity to perform experiments with novel geometries and pulse options.

Astra is a high power, ultra-short pulse Titanium-sapphire laser facility. It provides pulses of 800 nm light with 40 fs duration at energies up to 500 mJ. With two experimental areas, and focused intensities up to 10^{19} Wcm^{-2} , it offers new opportunities to researchers investigating the interaction of high-intensity laser light with matter. Astra is currently being upgraded to give two higher intensity beams

The Lasers *for* Science Facility (LSF) provides a broad range of lasers, laser-based techniques and expertise for scientists and industry. The major facilities housed at RAL are: Confocal Microscopy, Nanosecond Science, Ultrafast Spectroscopy and an X-ray and UV facility. The Laser Loan Pool provides commercial laser systems and diagnostics for researchers in the UK academic community to enable them to carry out laser experiments at their own institutions.

The Loan Pool is based in the Central Laser Facility's Lasers for Science Facility (LSF) at RAL in Oxfordshire. CLF staff are responsible for laser installation. Staff install the laser systems and provide expertise as well as providing on-site training to scientists in the use of lasers and instrumentation in a range of laser applications. The borrower must ensure their local laser safety rules are applied. Loan lasers are typically available for 15-week loans.

Recent Vulcan Experiments include: Novel Geometries for Nuclear Fusion; High-energy Sub-atomic Snooker; Record for Accelerating Laser Plasma Electrons; World's First High-energy Laser-produced Protons; Protons Reveal the Inner Workings of Plasmas; Development of Large Area Flat-screen Displays; Shortest Ever Pulselength Soft X-Ray Lasers; Astrophysics Simulations

Recent Astra Experiments include: Detecting Small Traces of Explosives; Hardening Molecular Bonds; Guiding Intense Laser Pulses Through Plasmas; Ultrafast Processes in Molecular Ions

The final timetable for our visit is not yet available. Numbers are **restricted to 15 members** and attendees will be provided with a location map and programme details / logistics nearer the time.

NOTE THIS VISIT IS ON A WEDNESDAY Previous accepted applicants have priority.