

In memory of an outstanding experimental plasma physicist, and pioneer of laser plasma interactions

Professor David Neely

1965 - 2020



Professor David Neely, a pioneer in experimental High Energy Density Plasmas (HEDP), internationally recognised experimental physicist and a community champion, passed away after a short and sudden illness in August 2020.

David was born in Londonderry, Northern Ireland. He studied physics at Queen's University Belfast (QUB), and completed his PhD there on the generation of soft x-ray laser pulses, under the supervision of Professor Ciaran Lewis. He worked as a Research Assistant at QUB, teaching and supporting the undergraduate research laboratories, before joining the CLF in 1993.

David's passion for his research always shone through, proving instrumental in developing ideas and concepts that have kept the CLF at the forefront of scientific achievements. He was a strong advocate for the new EPAC facility and Vulcan 20-20 upgrade, recognising their potential to enhance research in

his many areas of interest. Over the years, David pioneered experiments exploring laser driven ion and electron acceleration, fusion studies, high harmonic production, shocks, plasma diagnostics and industrial applications. As short pulse laser power steadily increased and attained PW performance, this enabled him to carry out experiments fully in the relativistic interaction regime. His interest in pre-plasma free interactions led to the utilisation of plasma mirrors in 2005 to enhance the laser contrast. This made it possible to accelerate protons to energies in the 100 MeV range using a technique called radiation transparency acceleration that depends on relativistic effects. Working with colleagues from Dstl, David

developed the idea of an x-ray “radar” that could potentially be used to probe the contents of containers remotely, and investigated using muons as a potential probe. His expertise was sought by space scientists to see how lasers could be used to de-orbit space debris, a potential hazard to satellites.

In 2005, David was promoted to lead the CLF’s Experimental Science Group, and in 2010 he became the Head of High Power Laser Science. In 2012, he was awarded an STFC Research Fellowship, to carry out independent research in high energy density science. David was a natural communicator, who formed collaborations and friendships around the world. Working with his extensive network of colleagues, he was able to carry out experiments on high power laser facilities throughout Europe, Asia and the USA. He held a Visiting Mitsuyuki Abe Chair

position at the Proton Medical Research Centre, Japan Atomic Energy Agency, and was awarded the Medal of International Collaboration of the Chinese Academy of Sciences for setting up a government funded UK-China collaboration, giving him an even greater international profile. David’s appointment to a Visiting Professorship at the University of Strathclyde in 2012 enabled him to co-supervise PhD students and enhance his research portfolio. He formed close and successful working relationships with his students, many of whom have gone on to take up positions at national and international laser facilities. David also took a very active role on the Editorial Board of *High Power Laser Science and Engineering (HPLSE)*.

David’s passing continues to be felt within the CLF and across the high energy density physics community. His contribution will never be forgotten.

