

# HiPER

**Contact** [chris.edwards@stfc.ac.uk](mailto:chris.edwards@stfc.ac.uk)

## CB Edwards, RJS Greenhalgh

Central Laser Facility, STFC Rutherford Appleton Laboratory  
Chilton, Didcot, Oxon. OX11 0QX, UK

### Introduction

The CLF is host to HiPER, an ambitious European Roadmap project that seeks to demonstrate the commercial viability of power production from laser driven fusion. Following the conclusion of the Preparatory Phase in April 2013, the project has entered the “Physics demonstration and technology development” phase.

There have been extremely positive developments of importance to HiPER over the period covered by this report.

### Scientific breakeven demonstration at NIF

“Scientific Breakeven” at the National Ignition Facility (NIF) was achieved at the end of September 2013 using a new design of target which gives improved hydrodynamic stability during the compression phase.

HiPER is following “direct drive”, high gain routes to ignition, rather than the indirect drive approach of NIF, but success at NIF will play an important role in securing funding for laser fusion in general and for HiPER in particular.

For more details on the latest result at NIF, visit the BBC news article at: <http://www.bbc.co.uk/news/science-environment-24429621>

### Launch of UK IFE Network

A network to assess UK capabilities in IFE has been established with funding from the Engineering and Physical Sciences Research Council. The network, led by Prof. Roland Smith of Imperial College, will conduct a number of meetings and workshops over the next two years to identify areas in which UK could contribute to any future major programme of research and technology development in inertial fusion energy (IFE).

### Access to beam time at Laser megaJoule

Academic access to beam time at the Laser MegaJoule (LMJ) and PETAL facilities, currently under construction in Bordeaux, has recently been agreed between the CEA, owners of the facilities, and the French Government. This is important for HiPER as access to LMJ opens up the possibility of demonstrating ignition, and ultimately high energy gain, essential for the commercial viability of power production from inertial fusion.

### IFE COST programme established

An E-U funded COST programme entitled “Developing the physics & the scientific community for inertial confinement fusion at the time of NIF ignition” has recently been awarded to the University of Bordeaux. Its aim is to support the academic community in preparing bids for experimental campaigns at LMJ.

The kick-off meeting, chaired by Prof. Dimitri Batani, was held from 5th to 7th March at the University of Bordeaux in Talence. Researchers from Europe, Russia, the United States and Japan discussed recent advances in laser-driven plasma science including inertial confinement fusion, particle acceleration, matter in extreme conditions and laboratory astrophysics. One of the highlights of the meeting was a visit to the LMJ facility itself.

This meeting helped the community to appreciate the scale of the task to field experiments at fusion scale, the requirements for development of precision diagnostics and the numerical simulations needed to underpin the design and analysis of experiments.

Visit the HiPER website at [www.hiper.org](http://www.hiper.org) for more information and the latest HiPER Project news



Researchers meet at Bordeaux to discuss prospects for laser driven fusion at the launch of the IFE COST programme