

## SCIENTIFIC REPORT

The "International Topical Conference on Plasma Science: Advanced Plasma Concepts" was hosted by Instituto Superior Técnico, Lisbon, and by the University of Algarve, Faro, Portugal. The conference took place in Faro, during the period 24-28 September 2012. The conference was organized by Padma Kant Shukla, (Ruhr University Bochum, Germany), Robert Bingham (RAL, United Kingdom) and José Tito Mendonça, (IST, Portugal). This scientific event belongs to a series of successful meetings, which started at the Abdus Salam International Centre for Theoretical Physics, Trieste, in 1989, and which has also been taking place at various other locations, including Faro and Lisbon in Portugal, and Santorini in Greece.

The aim the conference was to promote a broad area of knowledge, exploring the main advances in theory and applications of plasma physics. The purpose was also to provide training for young scientists from all over the world and to give them the opportunity to interact with senior scientists in an informal manner. The main focus of the scientific program was on stonly coupled ultra-cold plasmas, quantum plasmas, collisionless shocks and beams, intense laser-plasma interactions and plasma-based particle acceleration, and inertial and magnetic confinement fusion. A selected number of papers in these areas will appear shortly in a special issue of the Journal of Plasma Physics. The editors of this issue are: J. T. Mendonça, P. K. Shukla, B. Eliasson, and J. A. Rodrigues.

We would like to thank all the participants and invited speakers who contributed to this conference. The conference program and the list of participants are included here as separate files.

Quite recently, we have received the shocking news that Professor Padma Kant Shukla unexpectedly passed away on 26 January 2013, during his travel to New Delhi, India, to receive the prestigious Hind Rattan (Jewel of India) Award. Padma was one of the world's most renowned plasma physicists, with more than 1500 authored papers. He inspired and mentored many young scientific talents around the world.