

## Summary of ICFA Supported Mini-Workshop: HOMSC12



From the 25<sup>th</sup> of June through Wednesday lunchtime of the 27<sup>th</sup> of June the Cockcroft Institute and ASTeC hosted an ICFA supported mini workshop on Higher-Order-Mode Diagnostics and Suppression in Superconducting Cavities (HOMSC12). The local organizing committee for this international workshop was chaired by S. Buckley (ASTeC/STFC) and the scientific programme committee by R.M. Jones (Cockcroft Institute/University of Manchester).

Issues related to beam-excited wakefields in superconducting cavities were focused on. These wakefields can be decomposed into a series of higher order modes (HOMs), lower order modes, and same order modes. If left unchecked these HOMs in particular can appreciably dilute the beam quality, and in the worst case scenario can give rise to a beam break up instability. This workshop brought together approximately 60 delegates participated from Europe, Asia, and Northern America -all with a common purpose to study HOM suppression in superconducting cavities in fields ranging from energy recovery linacs, light sources and linear collider applications. Delegates with a vast experience in this area were present, along with those new to this area of study. Both invited plenary and contributed sessions were part of the 2.5 day meeting. This workshop encompassed issues in both electron and proton linacs, TESLA style cavities, third harmonic cavities, and TEM crabbing and other cavity designs.

The morning sessions were focused on plenary presentations whilst the afternoon sessions were devoted to five working groups:

- A. HOM Damping Requirements on a Project Basis (chaired by: J. Sekutowicz, and V.P. Yakovlev)
- B. HOM-based Diagnostics (chaired by: N. Baboi, C. Welsch and R.M. Jones)
- C. RF Simulations and Beam Dynamics (chaired by: M. Liepe and S. Molloy)
- D. HOM Damping Couplers and Loads (chaired by: J. Delayen and G. Burt)
- E. Low-level RF, Controls and System Integration (chaired by: T. Power)

Lively discussions ensued in several of these working groups, and it is clear that delegates profited from participating in working groups with a diversity of participants. Provision was made in the penultimate day to allow for a tour of the world class facilities of the Daresbury laboratory, which included the non-scaling FFAG EMMA and the energy recovery accelerator ALICE. Working group summaries concluded the event. In addition, tutorials were presented each day by I. Nesmiyan, J. Smith and I.R.R. Shinton.

Bursaries were provided, on a competitive basis, to support the attendance of two students. During the conference banquet at a nearby 700 year old Welsh castle, a prize was presented to the best student poster and a certificate to the runner up. Selected papers from this workshop will be published in a HOMSC12 special issue of Nuclear Instruments and Methods in Physics Research Section A. Sponsors of the event included: ICFA, IOP, RF Tech, ASTeC and the Cockcroft Institute. Details of the workshop, including a complete timetable and

talks for download are available here: <http://www.cockcroft.ac.uk/events/HOMSC12/>. Further information regarding the workshop and submission to the NIMA special issue is also available on request from the chair of the scientific programme committee, Prof. Roger M. Jones (roger.jones@manchester.ac.uk).