

### **C11 Particles and Fields:**

Commission held last annual meeting in August, 2008 at the International Conference on High Energy Physics (ICHEP08) in Philadelphia.

#### Assessment of activities and achievements in 2008:

Particle Physics: The Tevatron collider at Fermilab, USA achieved record luminosity, enhancing sensitivity levels of the currently running CDF and D0 experiments to the production of the hypothetical Higgs Boson predicted in the Standard Model.

The Electron-Positron Colliders in KEK, Japan, and SLAC, USA have been used successfully to study the decay properties of hadrons containing the heavy b-quark in detail. Both colliders halted their operations in 2008, with the facility at KEK embarking on a multi-year upgrade programme.

Operations were halted at the HERA electron-proton collider at DESY in Hamburg in 2007, with experimental activities left to continue only in the form of mining of the database. Analysed data thus far had continued to the understanding of Quantumchromo dynamics as the theory of strong interactions.

Construction of the Large Hadron Collider (LHC) accelerator and experimental set-up officially completed at CERN. First single operation of the LHC on September 10, 2008 was a success, with stable beams of good lifetimes successfully circulated in the 27 km ring several times. The LHC had to be shut down following a failure of a superconductive connection between two magnets which caused a helium leak. LHC expected to increase the accessible centre-of-mass energy by a factor of seven, making it possible to probe in detail the TeV energy range where several theoretical models predict new types of elementary particles.

C11 sponsored Conferences: Commission sponsored the following conferences:

- 34<sup>th</sup> International Conference on High Energy Physics held July 30 – August 5, 2008 at the University of Pennsylvania in Philadelphia. Next ICHEP conferences planned for 2010 in Paris, France, and 2012 in Melbourne, Australia.
- The International Neutrino and Astrophysics conference series (Neutrino 2008), sponsored jointly with C4 and C12, held on May 25 – 31, 2008 in Christchurch, New Zealand. Highlights of conference included new results from several experiments such as Borexino, SNO, MINOS and ICECUBE.
- Commission 11 has recognized the fundamental role of instrumentation in advancing the field of experimental particle physics, and subsequently plans to sponsor the first in a series of conferences on instrumentation: The first Technology and Instrumentation in Particle Physics (TIPP09) will be held on March 12 – 17, 2009 in Tsukuba, Japan. The TIPP conference will be held once every two years, focussing on instrumentation and technologies developed for particle physics experiments.

The 24<sup>th</sup> International Symposium on Lepton-Photon Interactions (LP09) will be held in Hamburg on August 17 – 22, 2009. The next Lepton-Photon conference is to be hosted by India in 2011.

The first International Particle Accelerator Conference will be held on May 23 – 28, 2010 in Kyoto, Japan. The IPAC will be the first in a new series of annual international accelerator conferences and will replace the regional accelerator conferences which used to be held mainly in Europe, Asia and the

Working Group on Assessment of Individual Achievements in Large Collaborations in Particle Physics: A working group has been initiated on the assessment of individual achievements in particle physics. Large numbers of collaborators in particle physics experiments make it difficult to fairly assess individual scientific achievements. The currently used criteria, based on list of publication and impact factors of papers with few authors does not clearly address

fields of science where large international collaborators are required to achieve significant scientific progress in the basic understanding of nature. The working group proposed some measures to enhance the visibility of individual achievements in large collaborations. Report of the working group is available on C11 web page.

Young Scientists Prize: The first Young Scientist Prizes in Particle Physics were awarded to Yasaman Farzan from Tehran for her work on Theoretical Particle Physics and to Kai-Feng Chen of Taipei for his achievements in experimental Particle Physics. The two prizes were awarded at the ICHEP08 summer conference in Philadelphia. Recipients presented their recent work at the plenary session of the conference.

Links with International Committee on Future Accelerators (ICFA), The C11 chair is an ex-officio member of ICFA and regularly attends ICFA meetings. New members of ICFA are confirmed by C11, and ICFA chair gives a report to annual C11 meetings.