

Forward

The XVI International Symposium on Very High Energy Cosmic Ray Interactions (ISVHECRI 2010) was held at the Fermi National Accelerator Laboratory (Fermilab), Batavia, IL, USA, 28 June – 2 July, 2010. This biennial symposium series dates back to 1980, when it was organized by the international Emulsion Chamber Committee (ECC) in liaison with its members who were also members of the Cosmic Ray Commission C4 of the International Union of Pure and Applied Physics (IUPAP), and focused on the physics of high energy interactions and related phenomena of cosmic rays, primarily as observed in nuclear emulsion chambers. Over the years, cosmic ray studies have continued to evolve with other technologies such as air shower arrays and hadron calorimeters, and these symposia have expanded to include results of studies of high-energy interactions, studies of air showers, high-energy muon and neutrino physics, and some aspects of related astrophysics as well. As the range of energies studied with particle accelerators and colliders has grown to overlap the energies earlier accessible only to cosmic ray studies, e.g. with the Brookhaven Relativistic Heavy Ion Collider (RHIC), the Fermilab Tevatron Collider, and now with the CERN Large Hadron Collider (LHC), these symposia have attracted an increasing number of physicists from the accelerator communities. The increasing interaction and overlap of these two communities is welcomed, as both pursue the studies of the theory and phenomenology in ultra-high energy collisions, the improvement of Monte Carlo collision generators, the detailed simulation of electromagnetic and hadronic cascades, observations of the quark-gluon plasma, and the studies of puzzling observed phenomena. The energies accessible to the hadron colliders are equivalent to cosmic ray energies of up to 25 PeV, which spans the energy range of most of the emulsion chamber studies, and reaches into the EeV range of the highest-energy observed cosmic rays.

Previous ISVHECRI meetings were held in Nahodka, Siberia (1980); La Paz and Rio de Janeiro (1982); Tokyo (1984); Beijing (1986); Lodz, Poland (1988); Tarbes, France (1990); Ann Arbor, United States (1992); Tokyo (1994); Karlsruhe, Germany (1996); Assergi, Italy (1998); Campinas, Brazil (2000); Geneva, Switzerland (2002); Pylos, Greece (2004); Weihai, China (2006); and Paris (2008). These symposia have been organized to be held in the years between the biennial International Cosmic Ray Conferences (ICRC). Many of these meeting sites were close to cosmic ray research stations; e.g. La Paz (near Mt. Chacaltaya, Bolivia), Tarbes (near Pic du Midi), Assergi (near the Gran Sasso Tunnel), and Pylos (at the NESTOR Institute). At Paris, it was decided to hold this 2010 meeting at Fermilab, as a logical successor to holding the 2002 meeting at the CERN Laboratory. The global, international character of these meeting sites and conference participants, and the growing interaction between the traditional cosmic ray and the accelerator/collider communities have been welcomed with enthusiasm.

The co-Chairs of the Symposium, Prof Lawrence W. Jones of the University of Michigan and Dr. Peter O. Mazur of Fermilab, are very grateful to the Fermilab management and staff, particularly the Fermilab Conference Office, for their generous support and facilities. One of us (LWJ) gratefully acknowledges special financial support from the University of Michigan. We are grateful for the sponsorship and support of the United States Department of Energy, Fermi National Accelerator Laboratory, and the Fermi Research Alliance. More than at any previous conference in our memory, the Local Organizing Committee was entirely responsible for the organization of both the logistical efforts and scientific program and was entirely responsible for the success of both. We also thank Dr. Henry Glass of Fermilab and Dr. Bryan Pattison of CERN for their organizational and editorial roles in the preparation of these proceedings.