The 38th International Conference on High Energy Physics (ICHEP)

Abstract: The 38th International Conference on High Energy Physics (ICHEP) held in Chicago from August 3 to 10, 2016 was for physicists from around the world to gather to share the latest advancements in particle physics, astrophysics/cosmology, and accelerator science and to discuss plans for major future facilities. DOE funding partially supported space rental and audio-visual services for scientific presentations.

Overview

ICHEP 2016 brought more than 1400 scientists, students, educators and members of industry from around the world. Fifty-one countries from Africa, Asia, Australia, Europe, North America and South America were represented at ICHEP 2016, which is the largest such conference ever held. This unexpectedly large interest in the meeting caused some re-thinking of the conference agenda to include as many talks and posters as possible. A record 1600 abstracts were submitted, of which 600 were selected for parallel presentations and 500 for posters. During three days of plenary sessions, 36 speakers (13 female and 23 male) from around the world overviewed results presented at the parallel and poster sessions.

One of the most popular parallel-session themes concerned enabling technologies, totaling around 400 abstract submissions, and rich collaborative opportunities were discussed in the new "technology applications and industrial opportunities" track. Another innovation at ICHEP 2016 concerned diversity and inclusion, which appeared as a separate parallel track. A number of new initiatives in communication, education and outreach were also piloted. These included lunchtime sessions aimed at increasing ICHEP participants' skills in outreach and communication through news and social media, "art interventions" and a physics slam, where five scientists competed to earn audience applause through presentations of their research. The outreach program was complemented by events at 30 public libraries in Chicago and a public lecture about gravitational waves.

Particle and accelerator physicists from around the world gathered to share the latest advancements in particle physics, astrophysics/cosmology, accelerator science, and accelerator / detector / computing technologies and to discuss plans for major future facilities. This greatly helps developing research programs with data (being taken) and developing future experiments and technologies.

Proceedings

The proceedings of the conference have been published in Proceedings of Science, [PoS(ICHEP2016) 2016], https://pos.sissa.it/cgi-bin/reader/conf.cgi?confid=282 .

Training and Development

Postdocs and students trained by particle physics see at first hand how experiment and theory work together to produce a coherent understanding of phenomena at the most

fundamental scale. Their experience in the design and construction of state-of-the-art electronics, simulation of the detector and data, and data analysis techniques gives them the ability to work in many areas of science and technology.

We had various training sessions for young scientists, including

- How to give 1’ elevator speeches on their research
- How to get involved in outreach programs
- How to make a great physics new story to the public
- How to make science fun and exciting through social media

Industry and Technology Transfer

24 companies co-sponsored ICHEP 2016. This is a strong indication for potential technology transfer from particle physics to industry. ICHEP 2016 organized a session that brought together industry and the particle and accelerator physics community providing industry an opportunity to seek collaborative agreement with physicists, and physicists to explore licensing or commercializing developments that have originated from the scientific community.

Science and technology change how we live and what we believe. Particle detectors and particle accelerators have been core components of technological innovation and economic competitiveness. Each generation of particle detectors and accelerators builds on the previous one, raising the potential for discovery and pushing the level of technology ever higher. The science and technology for particle physics have transformational applications for many areas of benefit to the nation’s well-being including medical isotope production, cancer treatments, biomedicine and drug development, national security, food sterilization, power transmission, and nuclear waste transmutation.