



PREFACE

The sixth International Particle Accelerator Conference, IPAC'15, took place at the Greater Richmond Convention Center, Richmond, Virginia, USA from Sunday to Friday, 3 to 9 May, 2015. It was attended by more than 1200 full-time delegates from approximately 29 different countries on all continents. Hosted by Jefferson Lab, the conference was organized under the auspices of the Institute of Electrical and Electronics Engineers (IEEE), the American Physical Society Division of Physics of Beams (APS-DPB), the National Science Foundation (NSF), and the Southeastern Universities Research Association (SURA).

The attendance of nearly 90 young scientists from all over the world was made possible through the sponsorship of societies, institutes and laboratories worldwide (in alphabetical order): the American Physical Society Division of Physics of Beams (APS-DPB), the Asian Committee for Future Accelerators (ACFA with contributions from IHEP, IMP, KEK, KIRAMS, KOMAC, NSRRC, PAL, RIKEN Nishina, RIKEN SPring-8, RISP, SINAP, and SLSA), The European Physical Society Accelerator Group (EPS-AG with contributions from ALBA-CELLS, Centro Fermi, CERN, CNRS-IN2P3, DESY, Diamond, ESRF, GSI, HZB, IFIC, INFN, JAI, Max-Lab, PSI, and STFC/Cockcroft Institute), the Fermi Research Alliance, Jefferson Science Associates, and the National Science Foundation (NSF). The organizers of IPAC'15 are grateful to all sponsors for their valuable support of students.

Andrew Hutton, (Jefferson Lab), Chair of the Organizing Committee (OC), Anne Holton, State of Virginia Secretary of Education, Stuart Henderson (Argonne National Lab), Scientific Program Committee Chair, and Fulvia Pilat (Jefferson Lab), Chair of the Local Organizing Committee (LOC), opened the conference.

Arne Freyberger, (Jefferson Lab) opened the scientific program with a presentation on *Commissioning and Operations of CEBAF at 12 GeV*, followed by *LHC Commissioning at Higher Energy* presented by Paul Collier (CERN). The other plenary talks on Monday morning were presented by Patrick Naulleau (LBNL), Anna Grassellino (FNAL) and Ferdi Willeke (BNL) respectively on *Industrial Applications of Free Electron Lasers: Extreme Ultraviolet Lithography, High Q Developments, and Commissioning of NSLS-II*.

Inspiring closing presentations were delivered by Sarah Cousineau, ORNL, *High Power Beam Facilities: Operational Experience, Challenges and the Future*; Yifang Wang, IHEP, *Future Circular Colliders*; and Tetsuya Ishikawa, RIKEN, *Science with 4th Generation Photon Sources*.

Fifty-nine invited and forty-eight contributed oral presentations of very high quality were made during the week, including a session celebrating the 50th anniversary of PACs. This special session included speakers on the histories of the PAC conference series (Stan Schriber), EPAC conference series (Caterina Biscari), APAC conference series, (Shin-Ichi Kurokawa), and Scientific Collaboration Promoting Peace (Hitoshi Murayama).

The scientific program was developed by the IPAC'15 Scientific Program Committee (SPC). It was a truly international body with members coming 50% from the Americas and 50% from Asia and Europe. The conference program spanned four and a half days, with plenary sessions on Monday and Friday mornings, and Thursday afternoon. All other sessions were composed of two invited oral sessions in parallel, and three contributed oral presentations in parallel, with the poster sessions scheduled alone at the end of each afternoon. Thirteen hundred posters were scheduled during the lively poster sessions at the end of each afternoon. These proceedings contain the reports of more than 1200 contributions.

An industrial exhibition took place during the first three days of the conference. Industrial exhibitors (89 companies) occupied 92 booths and presented their high technology products and services to the delegates in an excellent atmosphere conducive to discussions.

During the Accelerator Awards Session, the best student poster prizes were awarded to Itta Nozawa (ISIR) for his contribution entitled *Bunch Length Measurement of Femtosecond Electron Beam by Monitoring Coherent Transition Radiation* (MOPTY002), and Scott Rowan (CERN) for his contribution entitled *Interactions between Macroparticles and High-Energy Proton Beams* (TUPTY045). 119 students from 80 institutions participated in the successful Sunday student poster session, now a firm tradition of the IPAC conference series.

The APS Robert R. Wilson Prize, recognizing and encouraging outstanding achievement in the physics of particle accelerators was awarded to Hasan Padamsee of Fermilab, *for his leadership and pioneering world-renowned research in superconducting radiofrequency physics, materials science, and technology, which contributed to remarkable advances in the capability of particle accelerators.*

The IEEE Particle Accelerator Science and Technology (PAST) awards are granted at each Particle Accelerator Conference held in the Americas to two individuals who have made outstanding contributions to the development of particle accelerator science and technology.

Professor Ivan Bazarov, *Cornell University*, received the IEEE NPSS PAST 2015 award *“for contributions to science and technology of energy recovery linacs and high-brightness photoinjectors.*

Dr. Sergey Belomestnykh, *Brookhaven National Laboratory*, received the IEEE NPSS PAST 2015 award *“for achievements in the science and technology of RF and SRF for particle accelerators.*

The IEEE Nuclear and Plasma Sciences Society awards the PAST Doctoral Student Award to individuals who have made outstanding thesis research in particle accelerator science and technology.

Dr. Subashini De Silva, *Old Dominion University*, received the 2015 IEEE Particle Accelerator Science and Technology Doctoral Student Award, *for contributions to the development of a new class of superconducting structures for the deflection and crabbing of particle beams with a wide range of applications.*

The US Particle Accelerator School prizes honor individuals by recognizing their outstanding achievements over the full range of accelerator physics and technology. Two USPAS achievement prizes are awarded biennially; one to a scientist under 45 years of age.

Kaoru Yokoya, *KEK*, *for his numerous fundamental and wide ranging contributions to accelerator physics, including the understanding and modeling of the beam-beam interaction, polarization in storage rings, beam instabilities, accelerator impedance, coherent synchrotron radiation, and novel accelerator concepts.*

Rami Kishek, *University of Maryland*, *for groundbreaking work on the theory of multipactor discharge, his contributions to the understanding of physics of space-charge-dominated beams and his excellent mentorship of young scientists.*

The proceedings of IPAC'15 are published on the JACoW site (www.jacow.org). The processing of the electronic files of contributions prior to, during and immediately after the conference was achieved by the JACoW “seasoned experts”, who also trained less experienced volunteers from the JACoW International Collaboration. The team was composed of 30 persons from laboratories worldwide, many accomplishing several different tasks covering IT (setting up the computers and network), processing of contributions and transparencies, presentations management, poster session management, author reception and cross-checking of titles and authors. Thanks to the work of this dynamic team, a pre-press version with more than 1200 contributions was published at mid-day on the last day of the conference. The final version, with the invaluable assistance of Todd Satogata and Volker Schaa was published at the JACoW site just weeks after the conference. This is yet another impressive record set by the JACoW Collaboration, which is sincerely grateful to the supervisors of each of the team members, releasing them from their usual duties.

The success of IPAC'15 was due in great part to the truly excellent collaboration between the international teams of the OC and the SPC, and the LOC. Membership of the LOC, under the leadership of Fulvia Pilat (Jefferson Lab) included the following staff from Jefferson Lab: Evelyn Akers, Hari Areti, Erin Clifton, Anthony Cuffe, Brita Hampton, Andrew Hutton, Reza Kazimi, Theo McGuckin, Tina Menefee, Patrizia Rossi, Todd Satogata, Joe Scarcello, Pam Turk, Stephanie Vermeire; from Argonne National Lab: Stuart Henderson; from Southeastern University Research Association, Russell Moy; from HelmsBriscoe, Anita Chapman.

The high levels of participation and enthusiasm shown at IPAC'15 clearly indicate the strong mandate for the International Particle Accelerator Conference series from the worldwide accelerator community. May future events be even more successful than this one! The seventh IPAC will return to Asia and take place in Busan, Korea. We are convinced that the collaboration among the three regions, steadily enhanced in recent years, will continue to grow to the benefit of IPAC and the accelerator community worldwide.

Andrew Hutton, Jefferson Laboratory, Chair of the IPAC'15 Organizing Committee