

ERNEST ORLANDO LAWRENCE
BERKELEY NATIONAL LABORATORY



ACCELERATOR AND FUSION RESEARCH DIVISION

December 10, 2013

Cynthia A. Anderson, Director
Operations Division – Group II
Office of Acquisition and Assistance
Office of Science-Integrated Support Center-Chicago Office

Dear Ms. Anderson,

Attached is the close-out report of the scientific activities at the 2008 AAC workshop. The workshop activities are documented thoroughly in the proceedings of the meeting and published as

13th Advanced Accelerator Concepts Workshop, Santa Cruz, CA, 27 July – 2 August 2008, American Institute of Physics Conference Proceedings, Volume 1086, Melville New York 2009

Editors Carl B. Schroeder, Wim Leemans and Eric Esarey

Please let me know if anything else is needed.

Sincerely,

A handwritten signature in blue ink, appearing to read "Wim Leemans".

Wim Leemans, Ph.D.
Chair, AAC 2008 Workshop

Attachment: Close-out Report.

**Close-out Report on Scientific Activities at the 2008 AAC Workshop
(Award # DE-SC0007911/Project: DE-FG02-08ER41545)**

The Thirteenth Workshop on Advanced Accelerator Concepts (AAC) was held from July 27 to August 2, 2008 at the Chaminade Conference Center in Santa Cruz, California, USA, organized by the Lawrence Berkeley National Laboratory and the University of California at Berkeley. There were unprecedented levels of interest in the 2008 AAC Workshop, and participation was by invitation, with 215 workshop attendees, including 58 students. Reflecting the world-wide growth of the advanced accelerator community, there was significant international participation, with participants from twelve countries attending.

The AAC Workshop is a biennial forum for discussions and presentations on advanced accelerators and beam physics and technology. Begun in the early 1980's, this workshop series has provided a platform for dissemination and exploration of new ideas and concepts in the field of advanced accelerators. The 2008 AAC Workshop (<http://aac08.lbl.gov>) covered a wide range of advanced accelerator development, supporting future needs for colliders and particle and radiation sources. As these and previous Proceedings illustrate, there has been tremendous advances in the field over nearly thirty years of research.

The 2008 AAC Workshop Program was organized into six Working Groups: Working Group 1 focused its work on acceleration by laser-driven plasma-based structures; Working Group 2 discussed computational accelerator physics and applications of new algorithms to advanced accelerators; Working Group 3 surveyed recent advances in technologies for high-gradients using electromagnetic structures; Working Group 4 examined new work in high energy density physics and exotic accelerator schemes; Working Group 5 explored creating a linear collider using beam-driven plasma-based accelerators; and Working Group 6 considered recent developments in beam and radiation generation, monitoring, and control. Provided by the working group leaders, a brief summary of the results presented in each working group is contained in these Proceedings.

Sixteen invited plenary presentations were given: H. Murayama, "Physics Beyond LHC"; T. Raubenheimer, "Future R&D for Very High Energy Colliders"; P. Chen, "Laboratory Astrophysics"; C. Barty, "Laser Technology for Advanced Accelerators"; W. Gai "Advanced Accelerating Structures and their Interaction with Electron Beam"; C. Geddes, "Laser acceleration: Guiding and Injection"; T. Katsouleas, "Beam-driven Plasma Acceleration: Critical Issues on the Road to a Collider"; R. Fiorito, "Particle Beam Radiation Diagnostics"; M. Zepf, "Laser Acceleration of Protons and Ions"; D. Bruhwiler, "New Developments in the Simulation of Advanced Accelerator Concepts"; G. Nusinovich, "Structures and Breakdown"; S. Mangles, "Laser Wakefield Acceleration: Novel Diagnostics and PetaWatt Class Experiments"; W. Mori, "Particle Beam Dynamics in Plasma Accelerators: Beam Loading"; P. Piot, "Control and Manipulation of Electron Beams"; B. Cowan, "Optical Accelerator Structures"; B. Albright, "High Performance Modeling of Advanced Accelerators in the Era of Petascale Computing".

The first AAC Prize was awarded at this workshop for outstanding contributions to the science and technology of advanced accelerator concepts. The AAC Prize was

sponsored by a generous donation from Julien Bergoz of Bergoz Instrumentation, and was selected by the AAC Prize Selection Committee. The 2008 AAC Prize winner was Prof. Chandrashekhar J. Joshi of the University of California at Los Angeles.

The most outstanding student poster presentations in each working group were also honored with an award for the first time in the AAC series, also sponsored by Bergoz Instrumentation. The award winners were Jens Osterhoff (MPQ), Marwan Rihaoui (NIU), Feng Gao (ANL), Andrey Knyazik (UCLA), Ian Blumenfeld (SLAC), and Eric J. Montgomery (University of Maryland).

These Proceedings were organized as follows. Invited plenary papers are printed in the order that they were presented at the Workshop. Working group summaries are presented, summarizing the activities in each working group. Following the summaries are the contributed papers, organized by working group and loosely by subject matter. As these Proceedings demonstrate, significant progress has been made in the field of advanced accelerator research. We anticipate further progress over the next two years, which we expect to be presented at the next AAC Workshop, to be organized by the University of Maryland in 2010.

The success of the workshop was due to the work of the Scientific Advisory and Program Committee in laying out the workshop program, the Local Organizing Committee for ensuring a beautiful location and an enjoyable and well-run workshop and the participants for their enthusiasm and creativity. Special thanks go to Martha Conde, the workshop coordinator, Olivia Wong, the workshop secretary, Joe Chew, for computing support, and the excellent staff of the Chaminade.

We would like to acknowledge the financial support for the workshop provided by the U.S. Department of Energy, Office of High Energy Physics, the Lawrence Berkeley National Laboratory, and the University of California at Berkeley. We are also grateful for financial support from Amplitude Technologies, Bergoz Instrumentation, Femto Lasers, Newport Corporation, Ophir Optronics, RadiaBeam Technologies, Tech-X Corporation, Thales Laser, and Thorlabs.