

IEEE-NPSS Particle Accelerator Science and Technology (PAST) Award 2009

Awards of the Particle Accelerator Conference given on behalf of the Nuclear and Plasma Science Society of the IEEE and sponsored by NPSS. Two awards are given to recognize outstanding contributions to the development of particle accelerator technology.

The recipients are Prof. Chan Joshi of UCLA and Dr. Kiyomi Seiya of Fermilab.

Chandrashekhar Joshi is a Distinguished Professor of Electrical Engineering and the Director of the Center for High Frequency Electronics at University of California Los Angeles. He is a fellow the APS, IEEE and IoP (U.K.).

Joshi is known for his seminal contributions and leadership in the development of a new interdisciplinary field: Plasma Accelerators. Soon after arriving at UCLA in the early 1980s, he started a research effort on electron acceleration by space-charge density waves excited in a plasma using powerful laser pulses. Although such waves were easily excited using a two-frequency laser pulse, the so-called beat-wave technique, acceleration of electrons by such waves proved to be very challenging. After almost a decade



of painstaking work his group showed in the early 1990s that externally injected electrons could be trapped and accelerated with gradients exceeding 1 GeV/m over centimeter scale plasmas.

In order to extend the interaction length of a plasma accelerator to a meter-scale and thereby gain energies of interest to high energy physics community, Professors Joshi, Katsouleas (USC) and Siemann (SLAC) formed a collaboration that conducted a series of elegant experiments on beam-driven plasma accelerators. These experiments culminated in 2006 with the demonstration of energy doubling of 42 GeV electrons from the SLAC linac using a meter long plasma structure.

Professor Joshi received the 2009 IEEE/NPSS Particle Accelerator Science and Technology Award " For his *pioneering role, scientific contributions and leadership in the development of laser and particle driven plasma accelerators*".