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Beam-driven, Plasma-based Particle Acceleration

Tuesday, November 29, 2011 2:30 PM (30 minutes)

Particle accelerators at the energy frontier are getting ever larger. Plasma-based particle accelerators operate at gradients in the 1-100GeV/m and could become a new, more compact and therefore cheaper accelerator technology. In the plasma wakefield accelerator (PWFA) the accelerating gradient is driven by a short particle bunch. PWFA experiments have already demonstrated energy gain by trailing electrons of 42GeV in only 85cm of plasma. Future experiments are geared toward multi-GeV acceleration of a high quality witness bunch (SLA_FACET), the extraction of large amounts of energy from a proton drive bunch (MPP-CERN), and large relative energy gain and basic PWFA physics with MeV bunches (BNL-ATF). An introduction to the PWFA, a summary of experimental results, as well as an outlook to future experiments will be given.

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Session Classification: Satellite Meeting