

Abstract Submitted
for the NWS11 Meeting of
The American Physical Society

Particle Flow Calorimetry at the ILC¹ ELIZABETH C. BROST, CHAOWAROJ WANOTAYAROJ, JAMES E. BRAU, Center for High Energy Physics, University of Oregon — The Silicon Detector (SiD) concept is under development for the International Linear Collider (ILC). SiD is designed for high-precision measurements of electron-positron collisions at the ILC for center of mass energies up to 1 TeV, addressing fundamental questions of particle physics, including the mechanism responsible for electroweak symmetry breaking and the generation of mass, the unification of forces, the structure of space-time at short distances, and connections with cosmology. These studies require excellent jet energy resolution. SiD features a finely-segmented silicon-tungsten electromagnetic calorimeter (ECAL) and a multi-layer steel with resistive plate chambers (RPC) hadron calorimeter (HCAL), in a design optimized for Particle Flow Calorimetry. The Particle Flow Algorithm (PFA) uses energy measurements of charged particles in the tracker and separated calorimeter hits from neutral particles, in order to achieve the best possible jet energy resolution. We present studies of energy measurement and particle identification in the ECAL and HCAL investigating improvements in the SiD PFA.

¹Research supported in part by the U.S. Department of Energy.

Elizabeth C. Brost
Center for High Energy Physics, University of Oregon

Date submitted: 13 Oct 2011

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