# Electron Cloud Modeling Results for Time-Resolved Shielded Pickup Measurements at CesrTA

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The Cornell Electron Storage Ring Test Accelerator (CesrTA) program includes investigations into electron cloud buildup, applying various mitigation techniques in custom vacuum chambers. Among these are two 1.1-m-long sections located symmetrically in the east and west arc regions. These chambers are equipped with pickup detectors shielded against the direct beam-induced signal. They detect cloud electrons migrating through an 18-mm-diameter pattern of holes in the top of the chamber. A digitizing oscilloscope is used to record the signals, providing time-resolved information on cloud development. Carbon-coated, TiN-coated and uncoated aluminum chambers have been tested. Electron and positron beams of 2.1, 4.0 and 5.3 GeV with a variety of bunch populations and spacings in steps of 4 and 14 ns have been used. Here we report on results from the ECLOUD modeling code which highlight the sensitivity of these measurements to model parameters such as the photoelectron azimuthal and energy distributions at production, and the secondary yield parameters including the true secondary, rediffused, and elastic yield values. In particular, witness bunch studies exhibit high sensitivity to the elastic yield by providing information on cloud decay times.

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