Cornell University
Laboratory for Elementary-Particle Physics

ECLOUD Simulations for the Shielded Button Measurements with Solenoidal Magnetic Field Recorded in June 2010

All material for this talk may be obtained at www.lepp.cornell.edu/~critten/cesrta/ecloud/7jul10

The measurements are described here: https://webdb.lepp.cornell.edu/elog/CTA+MS/643

See also previous talks on simulations for the shielded button data on 4/21, 4/28, and 5/12/2010

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Cornell Laboratory for Accelerator-Based Sciences and Education

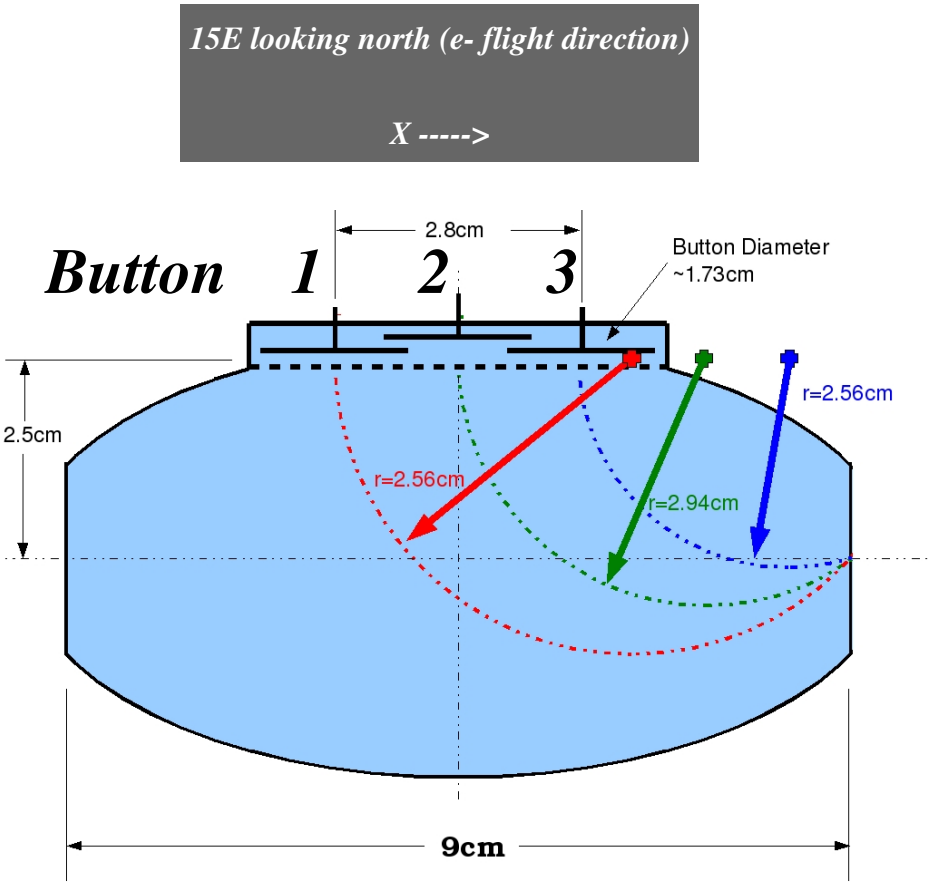
Electron Cloud Meeting

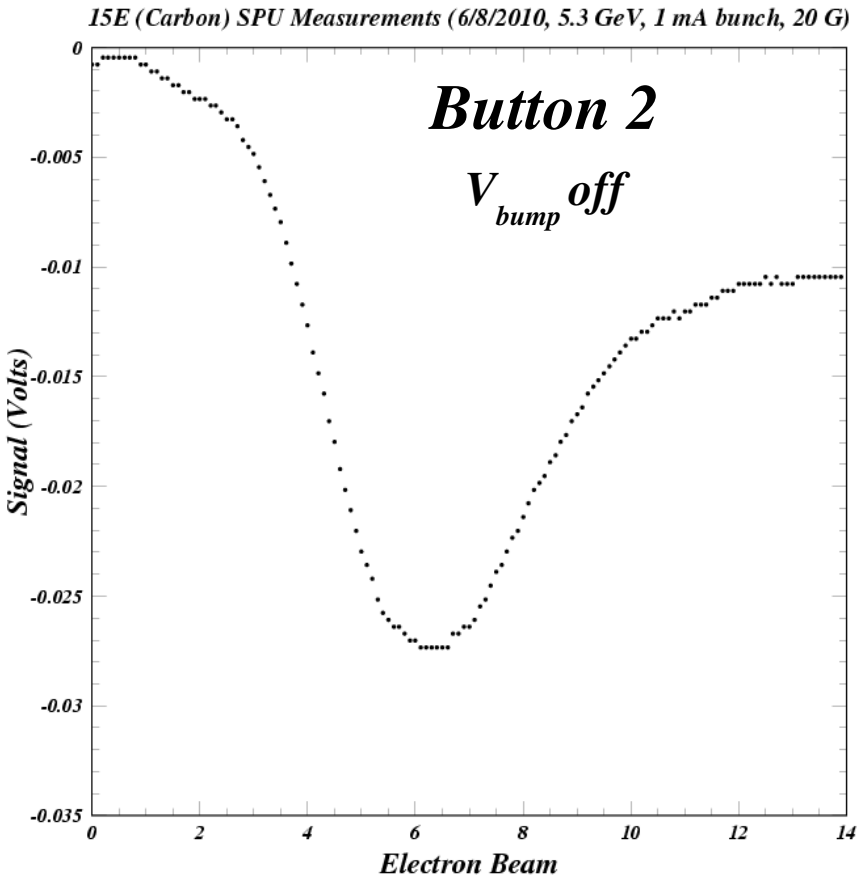
7 July 2010

Shielded Button Measurements 8 June 2010

B_{sol} = 5 - 40 G, 5.3 GeV e+/e-, V_{bias} = -50, 50 V, V_{bump} (60) = -800 – 800 cu

15W (Al), 15E (Al + Carbon)





Circular trajectories drawn assuming e- perpendicular incidence at the center of the button and common primary source point.

Shielded Button Measurements 8 June 2010

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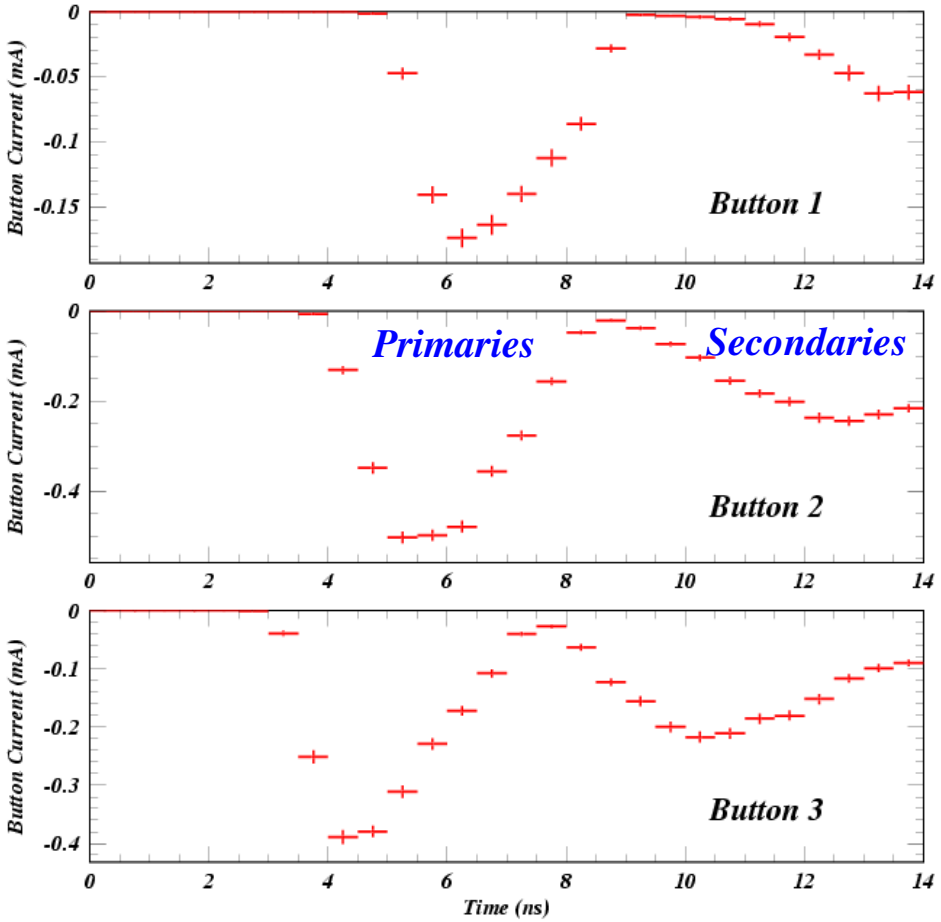
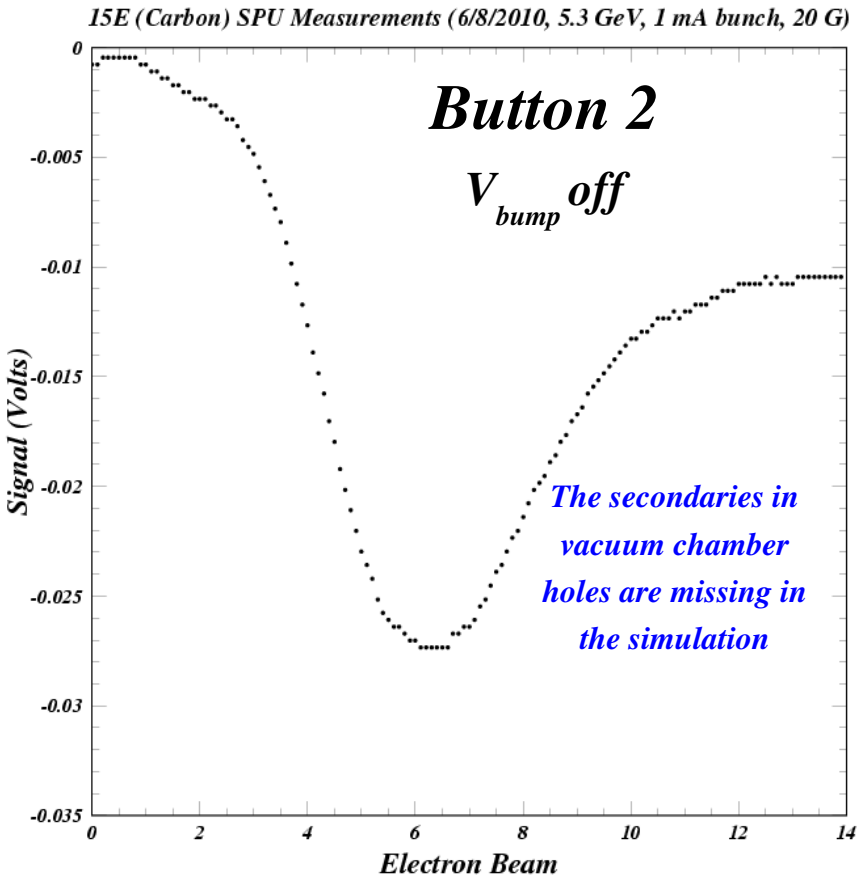




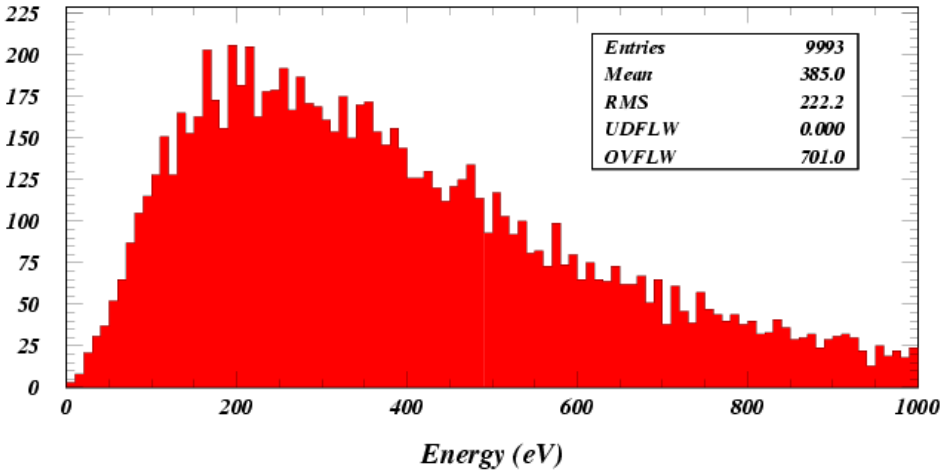
ECLOUD simulation

Reflectivity = 0

Photoelectron energy parametrization: $F(E) = E^{P1} / (1 + E/E_0)^{P2}$

Button Energy Acceptance for B_{sol} = 20 G

The photoelectron energy spectrum is chosen to be broad enough to cover all buttons



The button momentum selection determines the signal shape.

The magnetic field strength can be used to change the button acceptance and signal shape, but separate measurements and simulations must be normalized to determine the production energy spectrum.

The button bias voltage is a poor energy analyzer because of secondaries produced on the button.

Job 16441: Button Signal Energies For 0 < T < 14 ns: Primaries Only