Cornell University
Laboratory for Elementary-Particle Physics

Comparison of Primary Photoelectron Generation in ECLOUD, CLOUDLAND and POSINST

(NB: Distributions updated on August 29)

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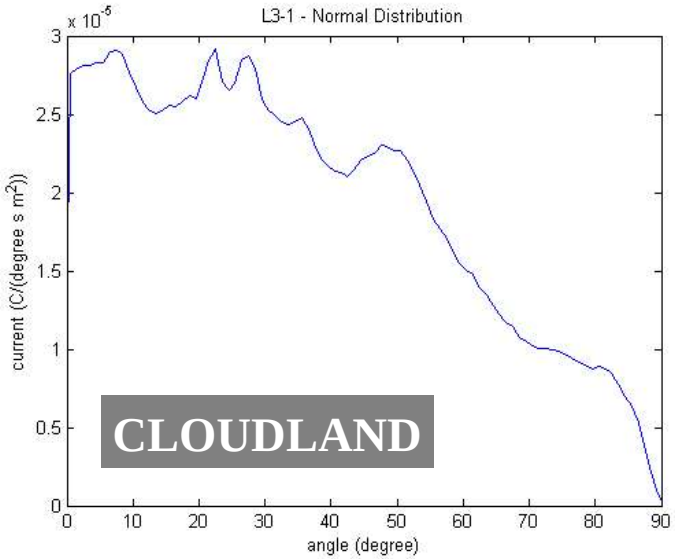
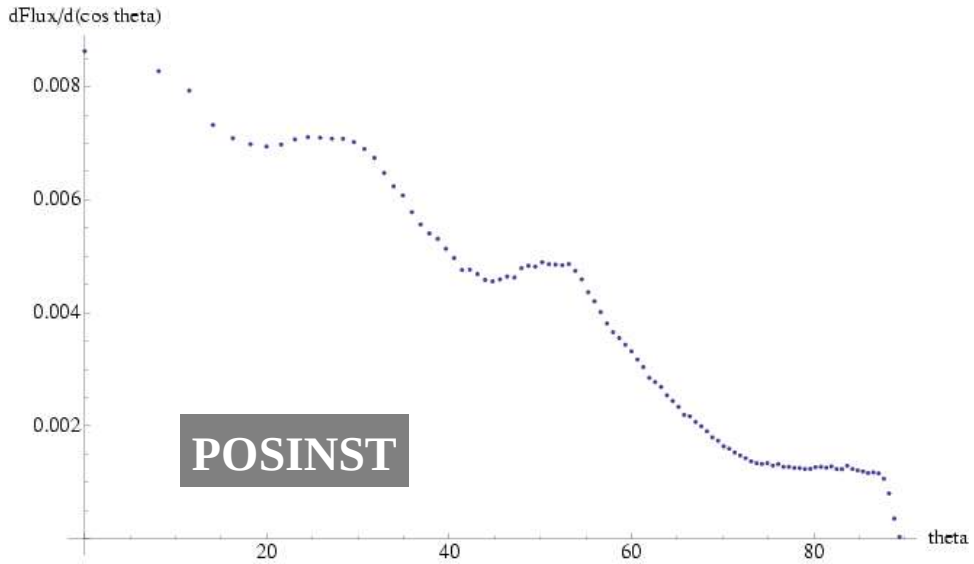
Electron Cloud Simulations Meeting

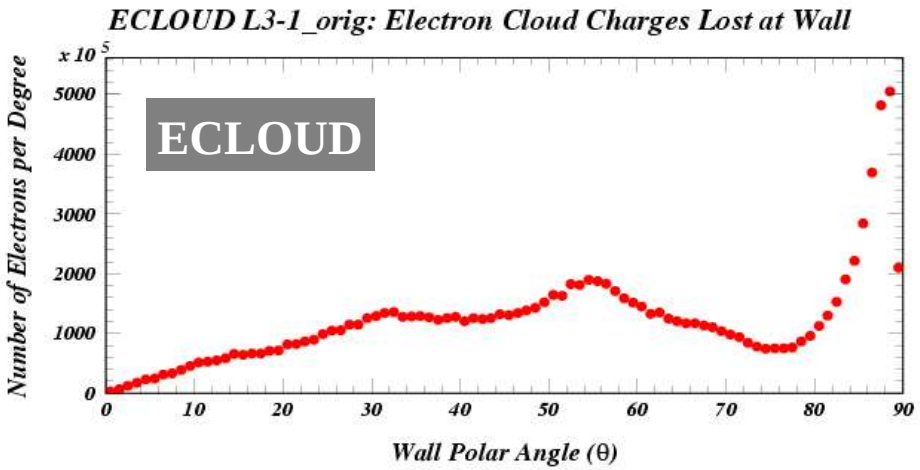
Wilson Lab

23 August 2008

Angle Relative to Perpendicular of Cloud Electrons on Beampipe Wall





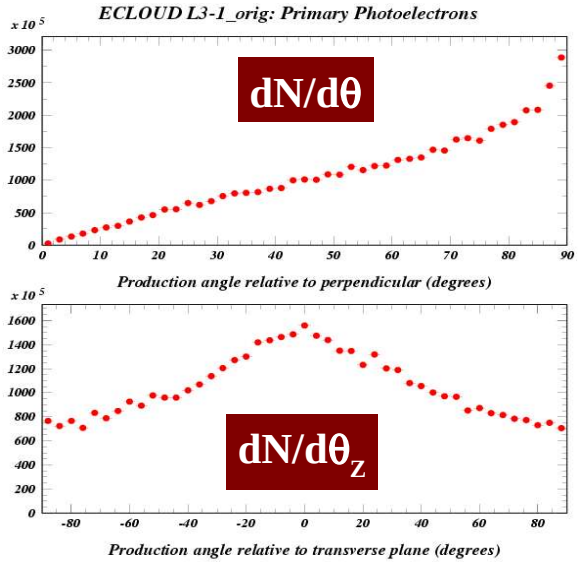


Why do the lost cloud macroparticles hit the beampipe wall at grazing incidence in ECLOUD?

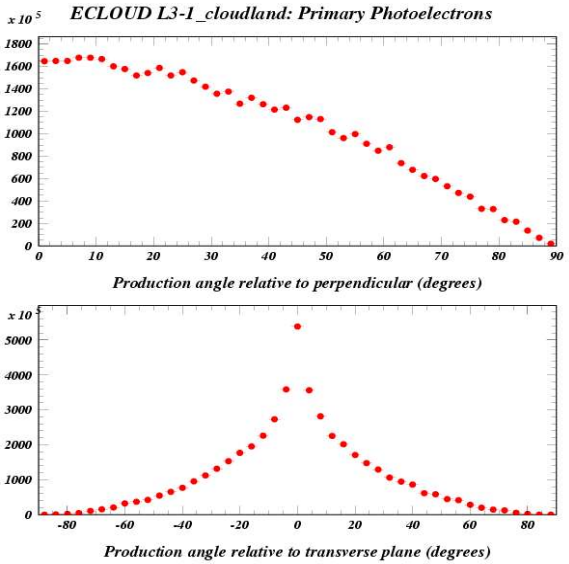
Primary Photoelectron Production Angles

Using different primary p.e. momentum generation models in ECLOUD ...

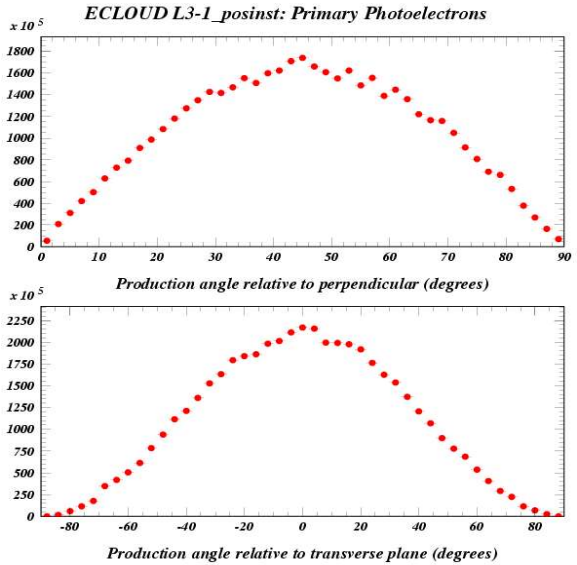
ECLOUD



CLOUDLAND



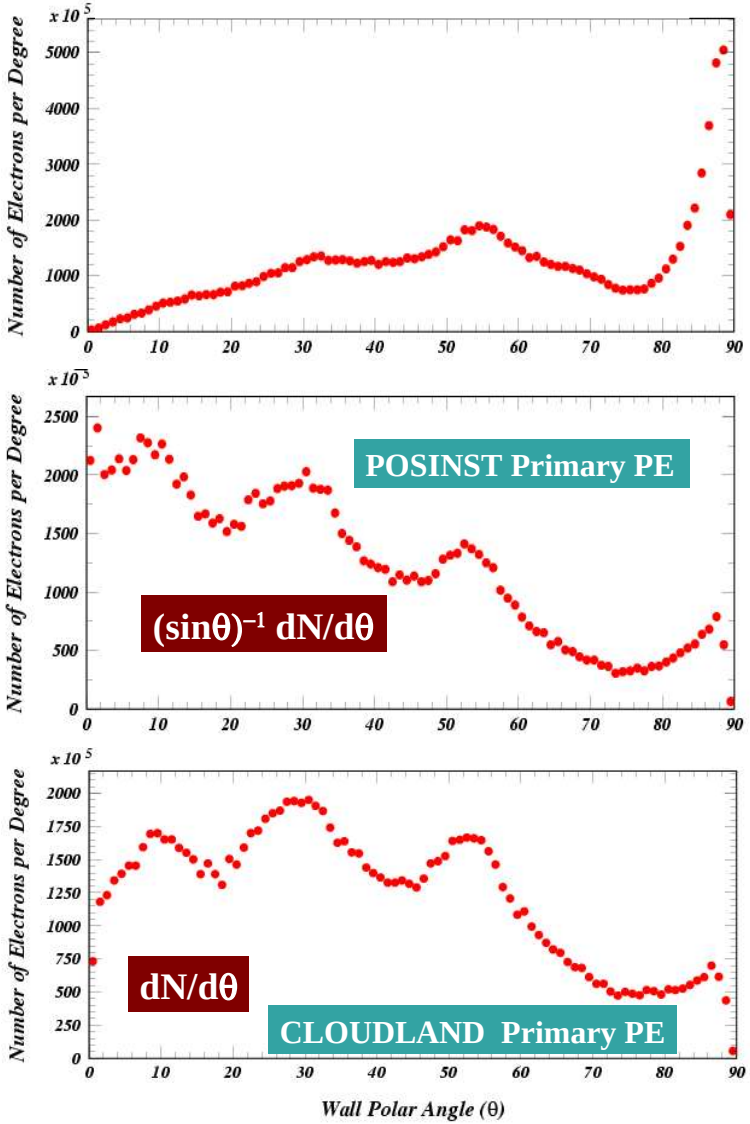
POSINST



- *ECLOUD generates at grazing angles, in part due to a large longitudinal component. It also has an apparent bug which results in indeterminate kinetic energy.*
- *CLOUDLAND generates predominantly near perpendicular, with the narrowest longitudinal component.*
- *POSINST prefers production angles at 45 degrees relative to perpendicular.*

Angle Relative to Perpendicular of Cloud Electrons on Beampipe Wall

ECLOUD with various primary PE distributions



- *Much improved comparison, but work remains*
- *Need convention for comparison quantities*
- *How to choose which generation algorithm?*