

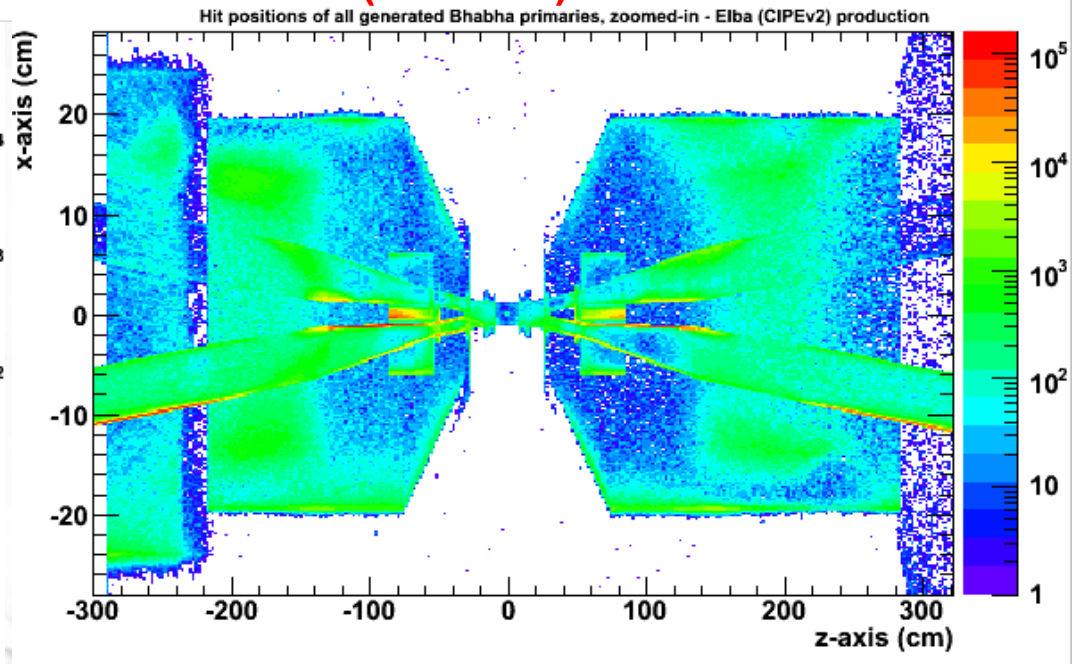
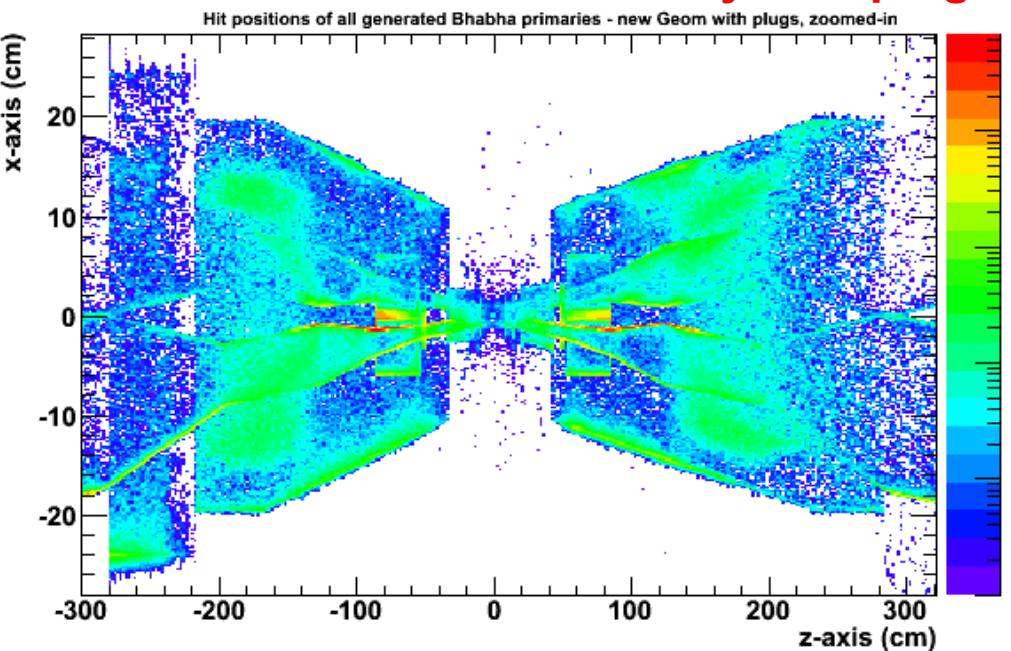
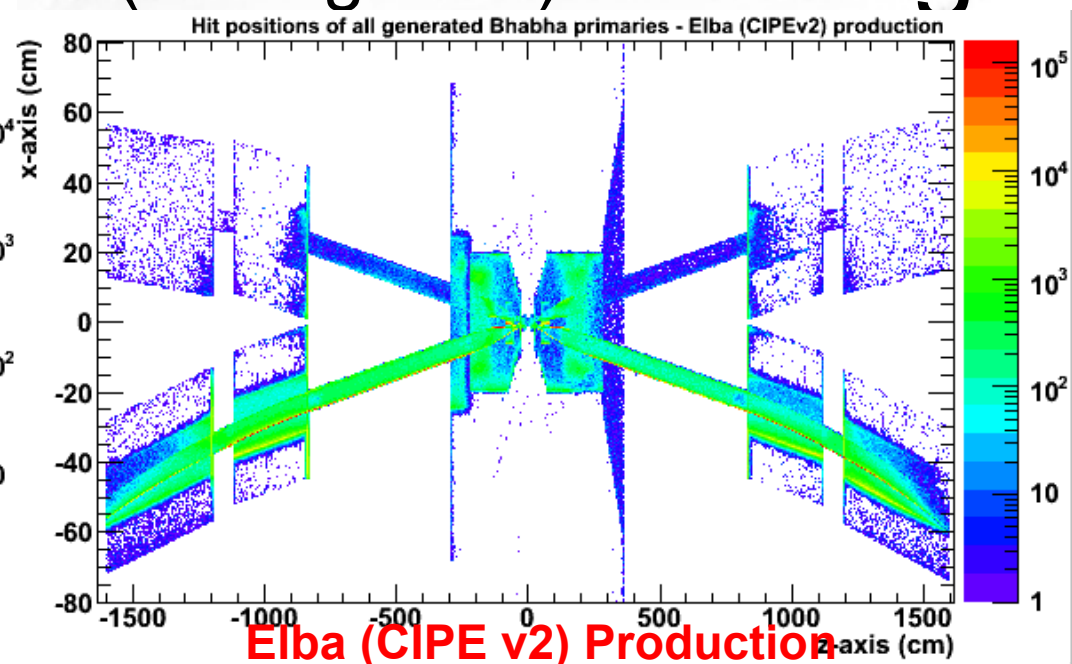
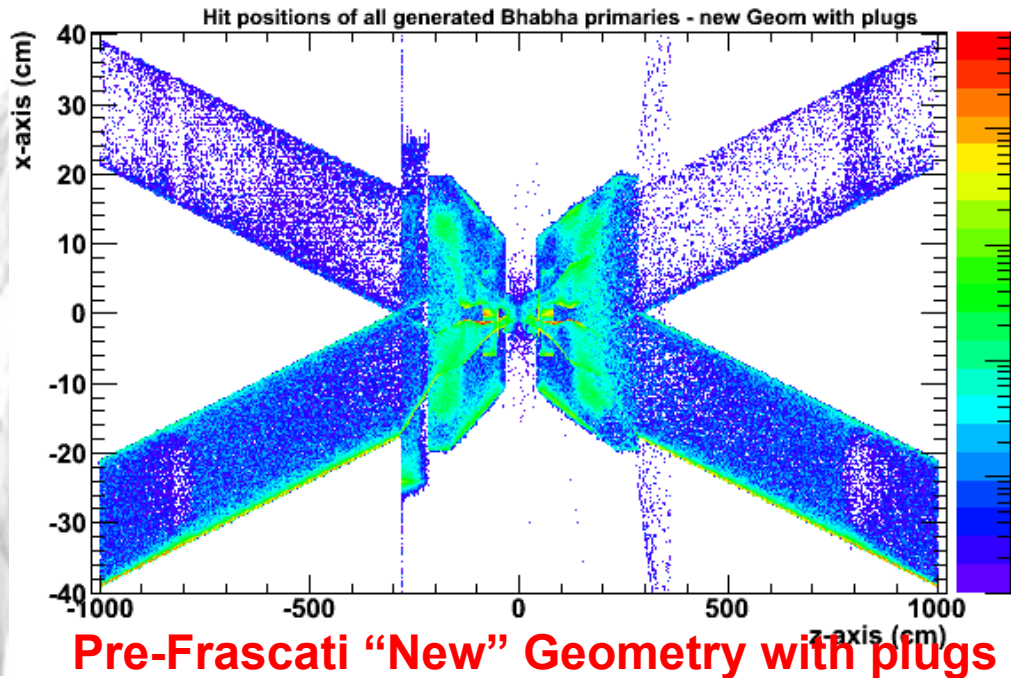
SuperB:

DCH rates from Radiative Bhabhas in the Elba Simulation

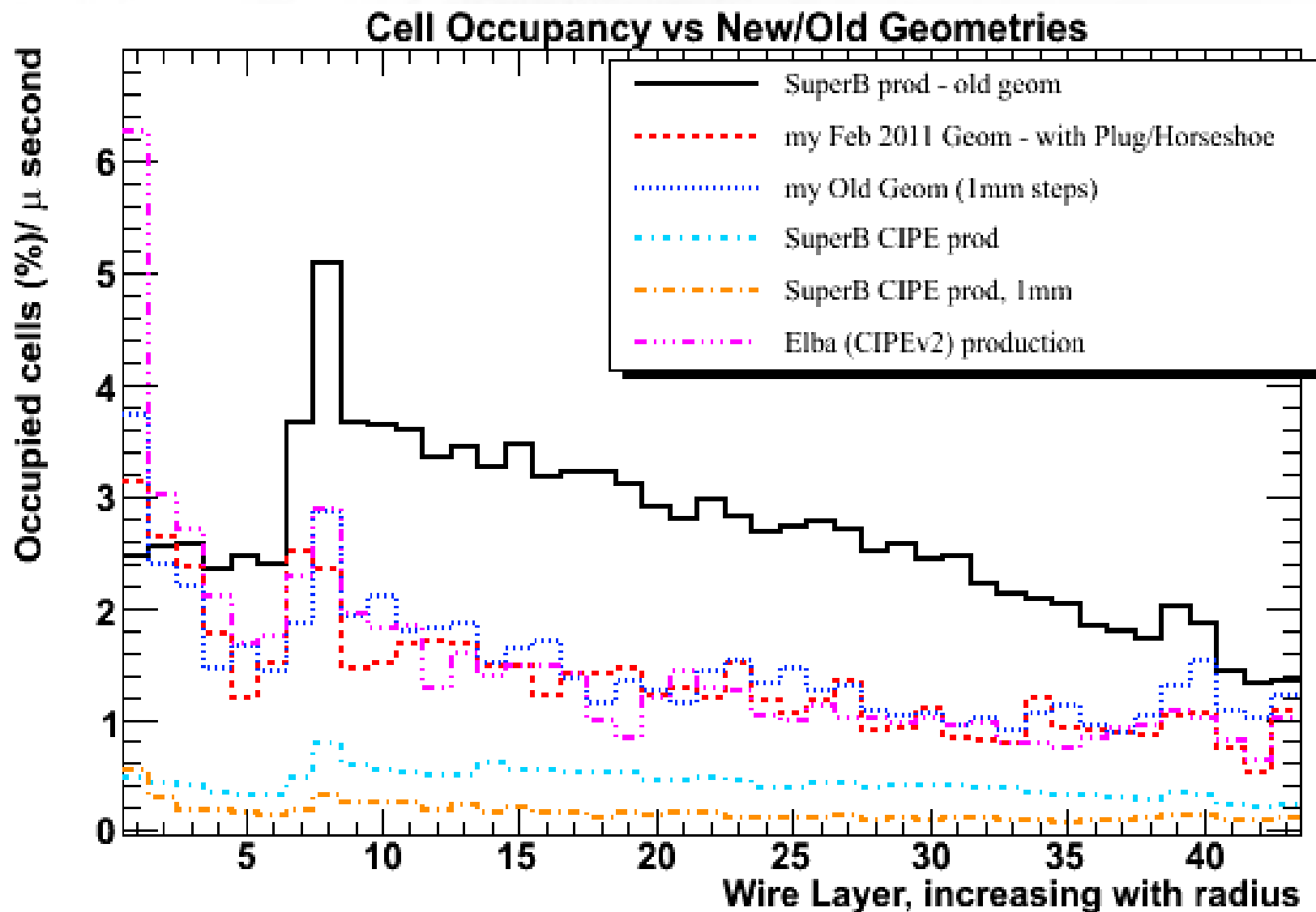
Dana Lindemann
McGill University

SuperB Backgrounds Meeting
May 24, 2011

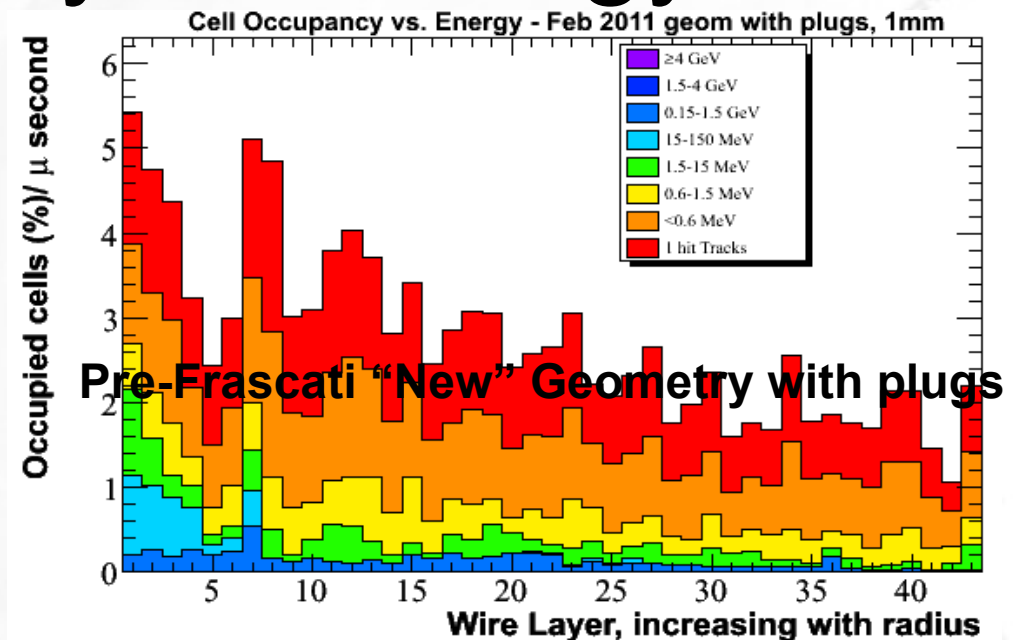
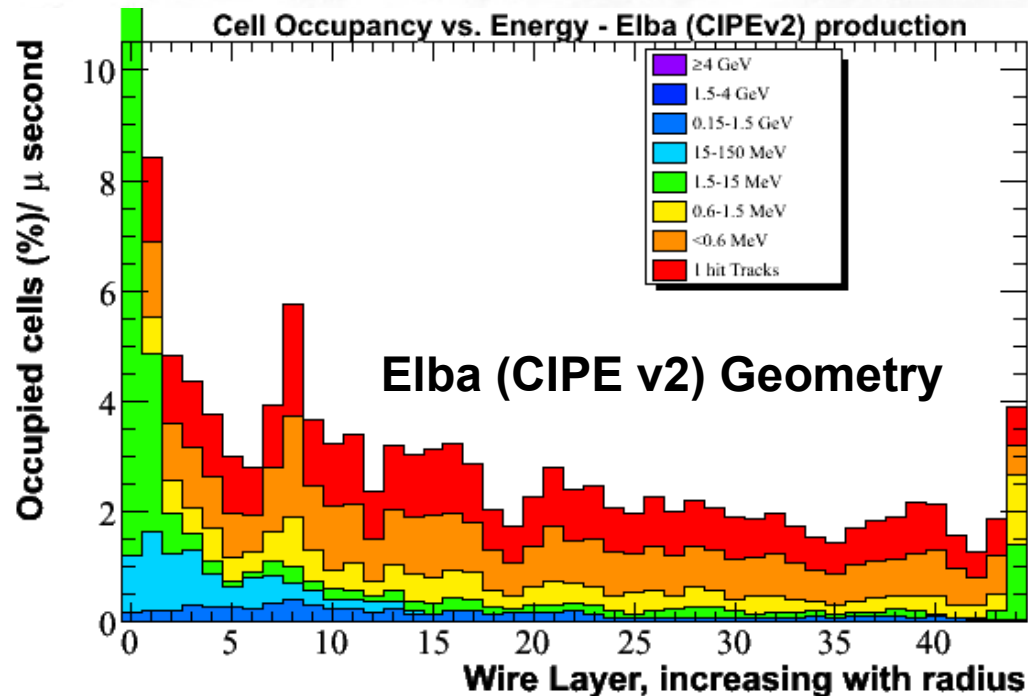
Elba vs. Pre-Frascati (“new geom”) w/ Plugs



Comparison of Samples

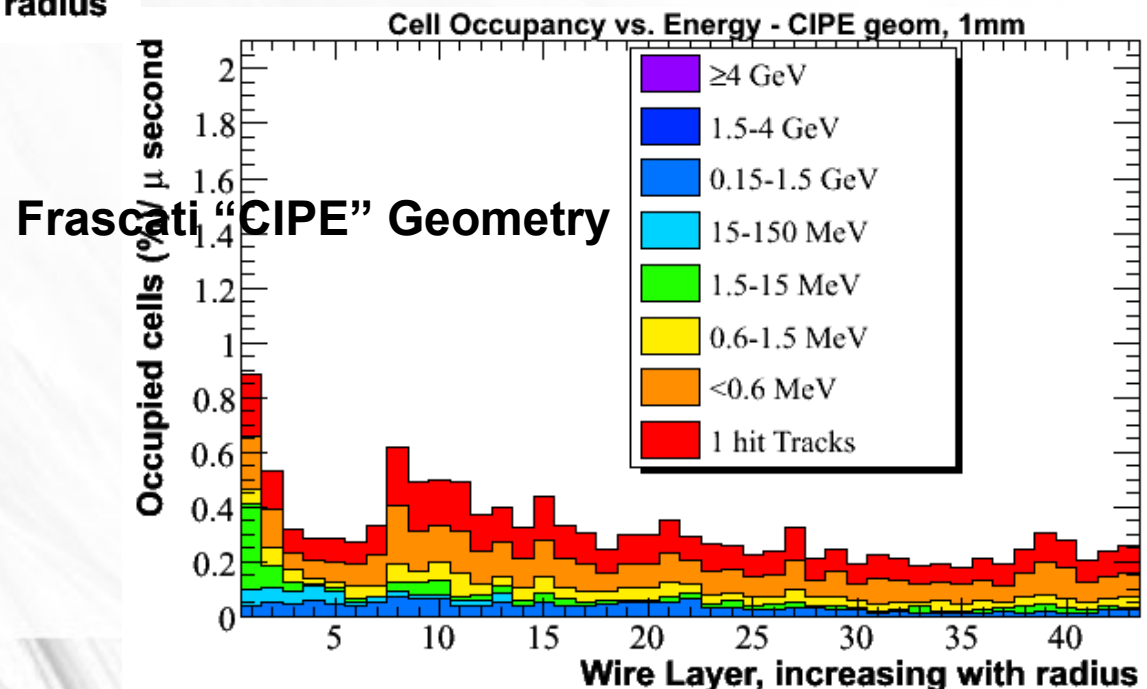


“Elba” Geometry vs. Energy

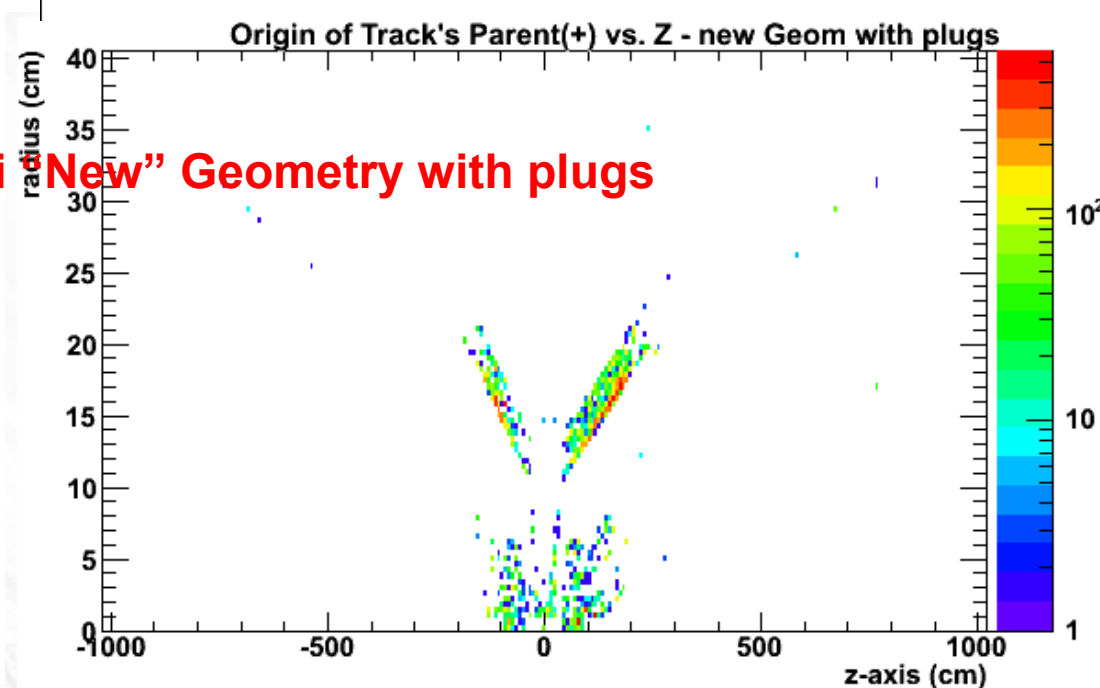
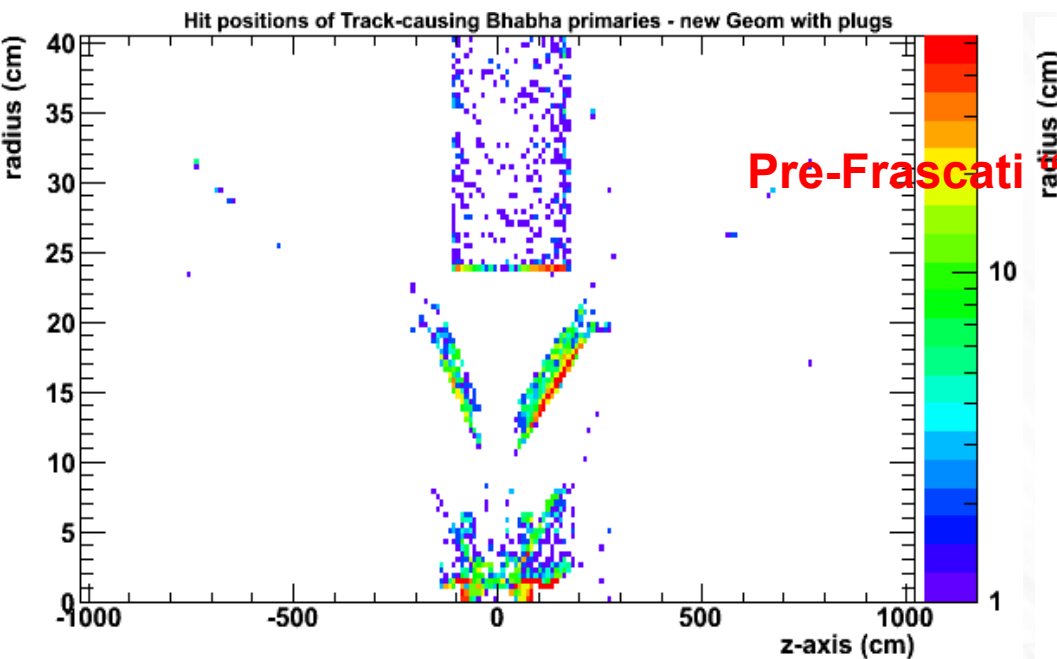
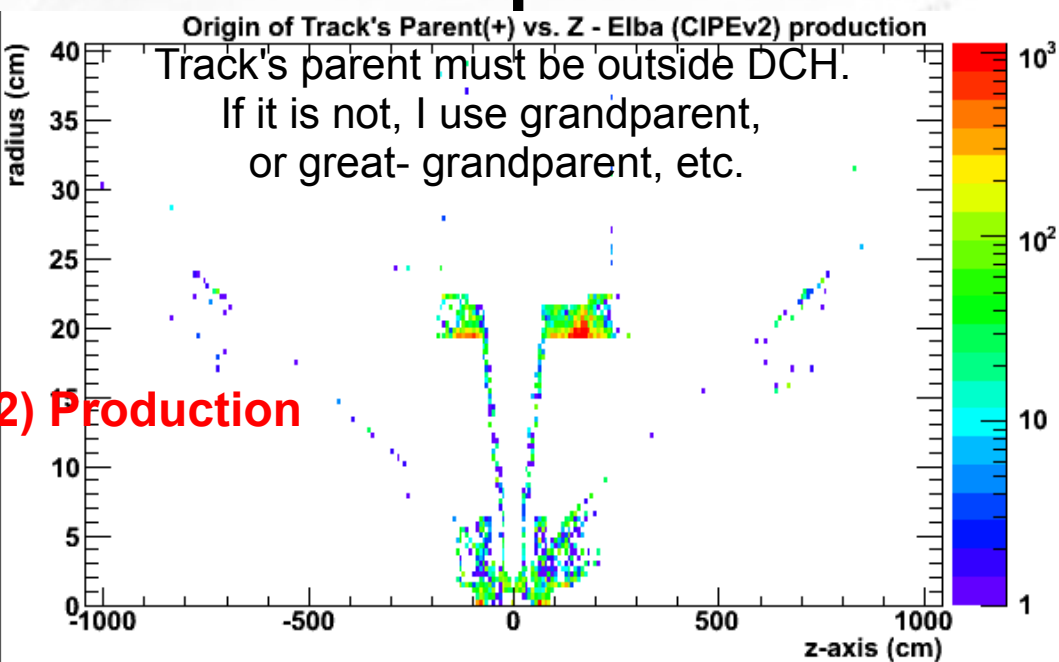
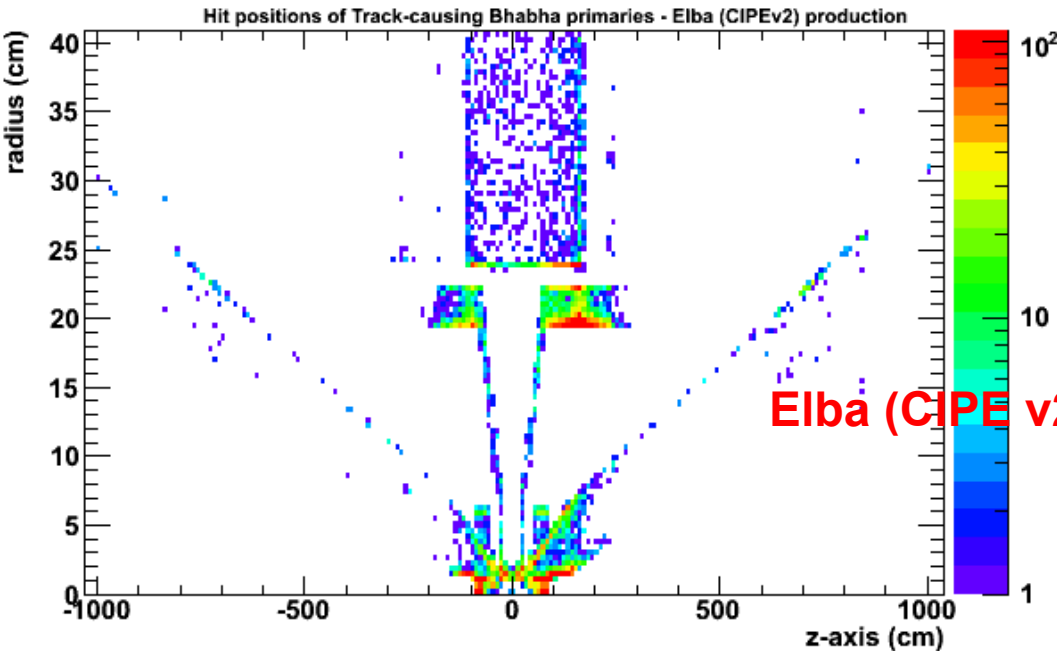


Note: By splitting plots into stacked colored “bins”, falsely higher occupancies are shown.

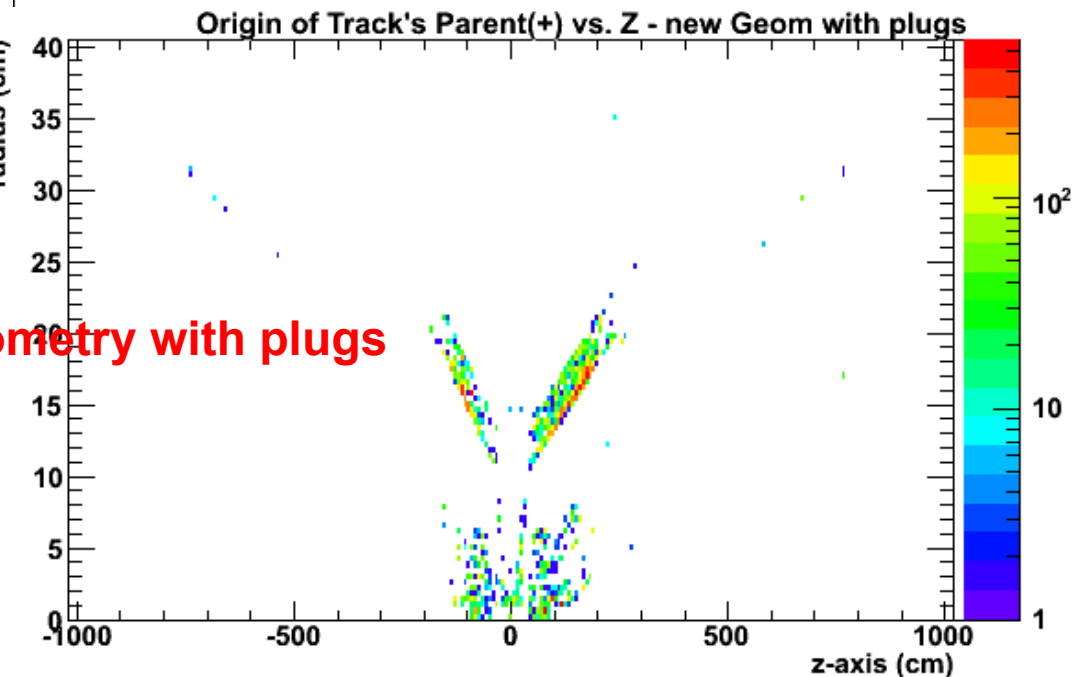
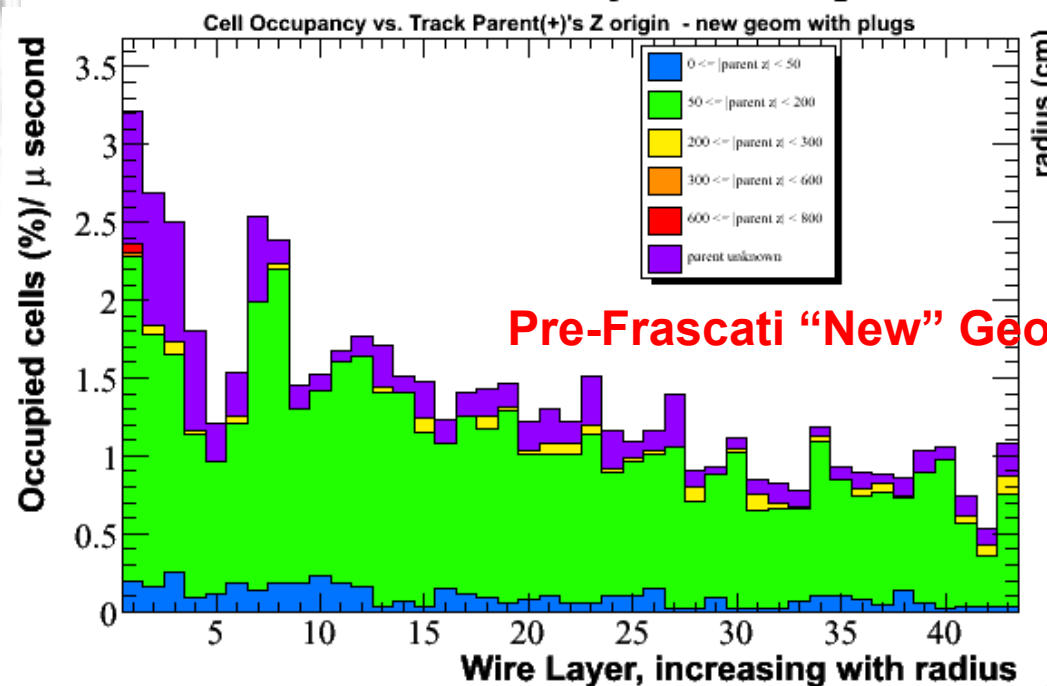
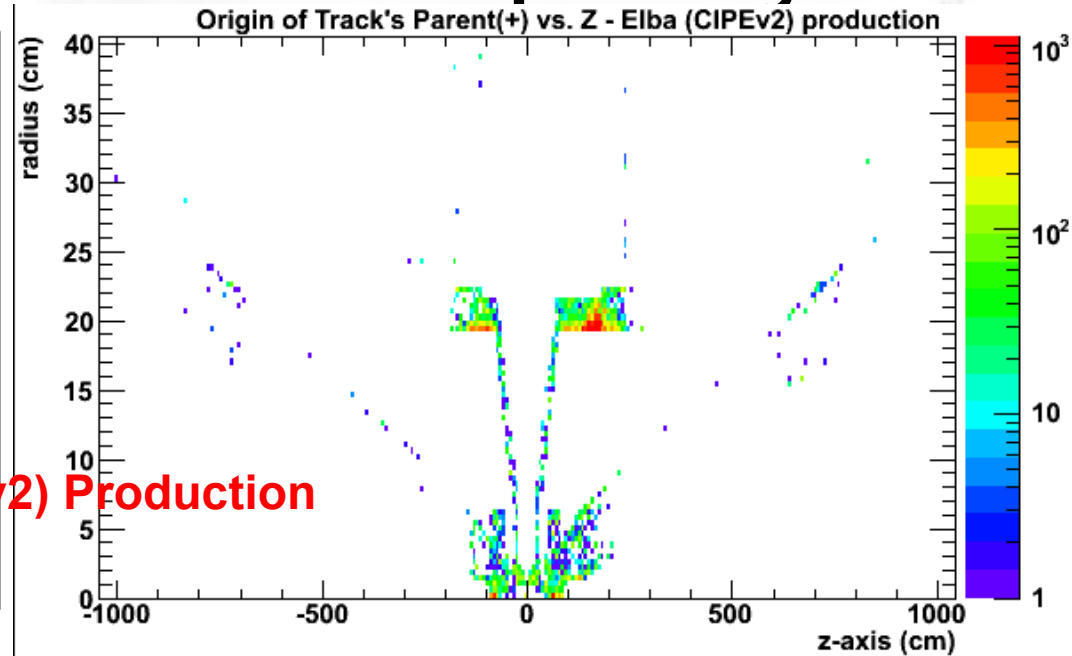
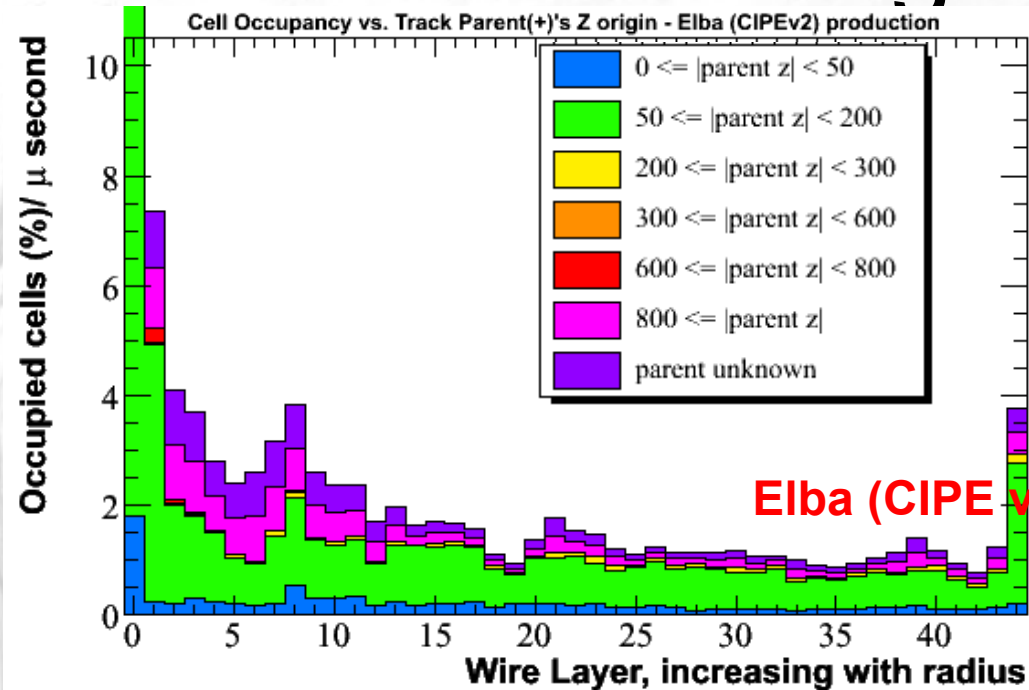
Wire layer 0 and 44 are actually the DCH boundaries, not wires.



Track-producing Bhabhas/parents



Parent's Z origin vs. Occupancy

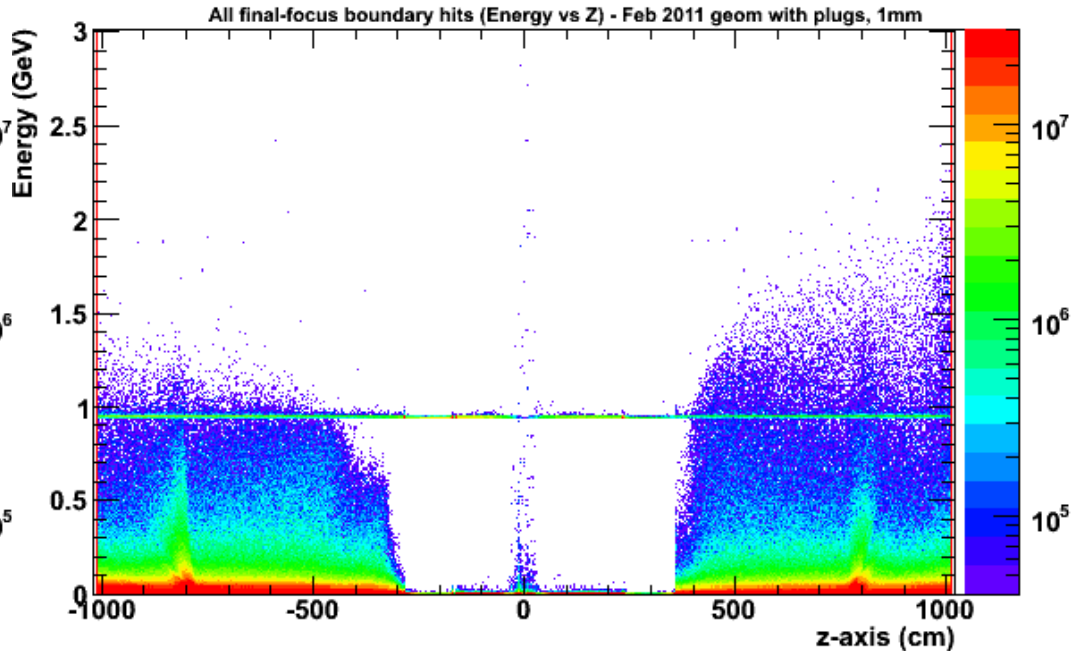
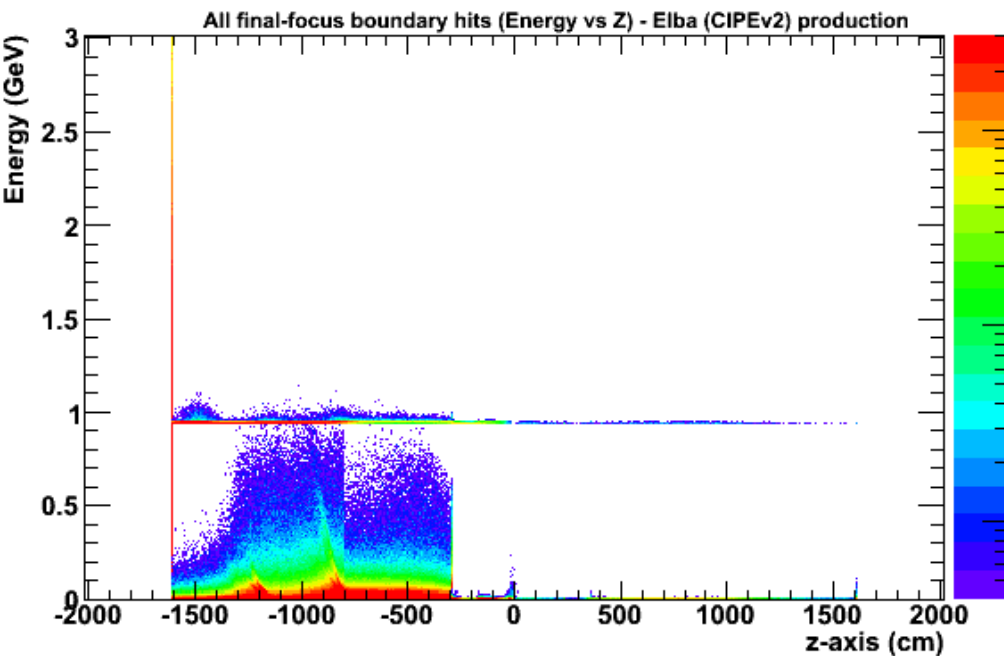
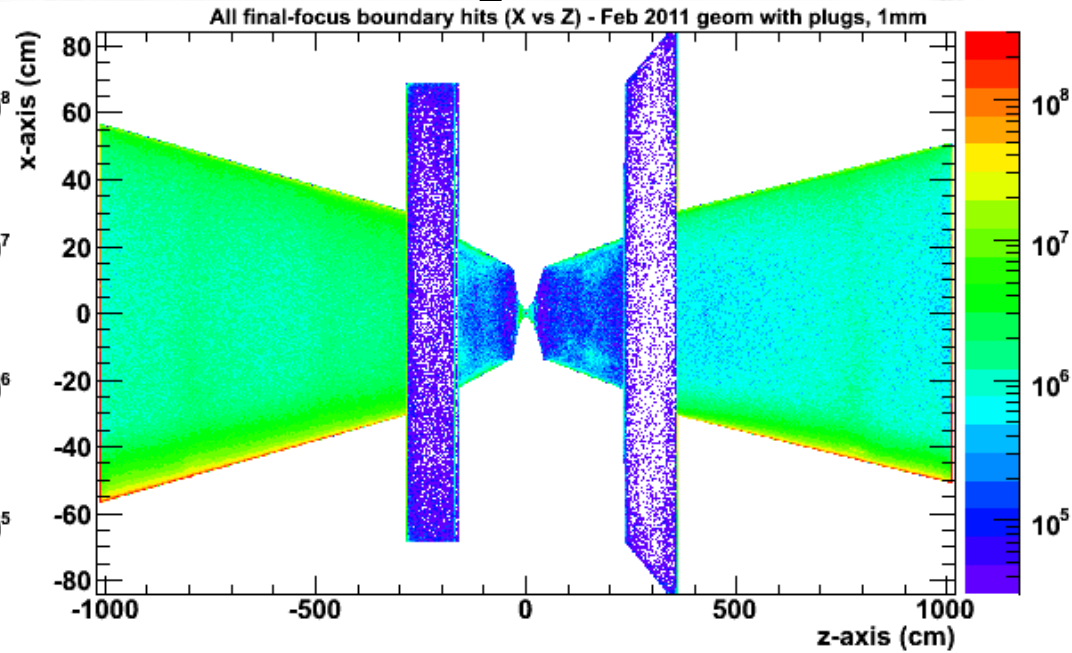
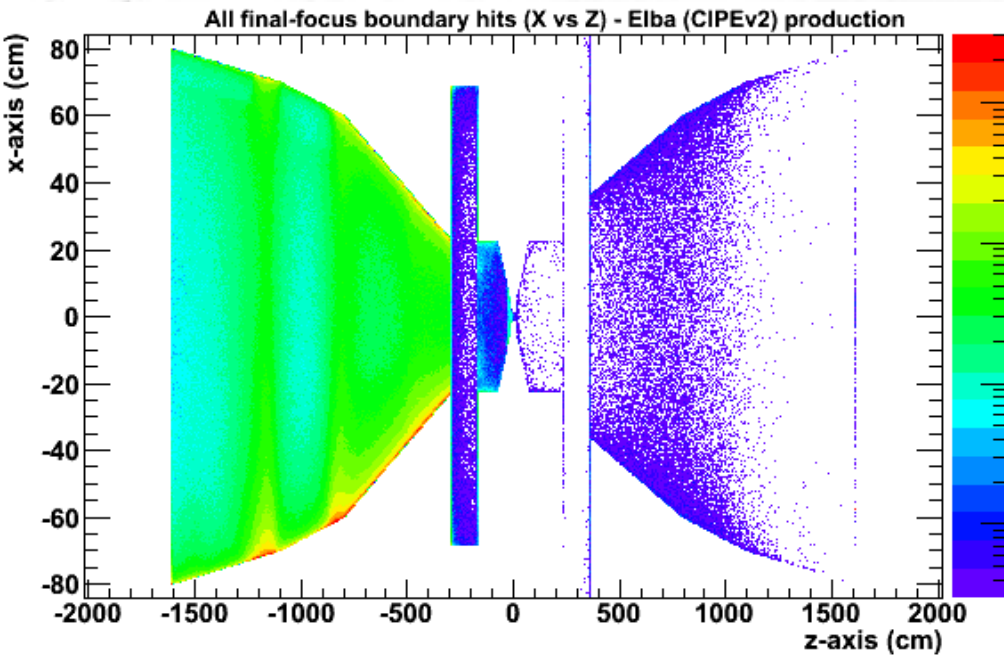


Conclusions

- New Final Focus design shows increase in occupancy back to levels pre-Frascati.
 - But never had Truth info for Frascati samples so I'm not sure why those were so low....
- Most of occupancy is coming from the shield's new corner.

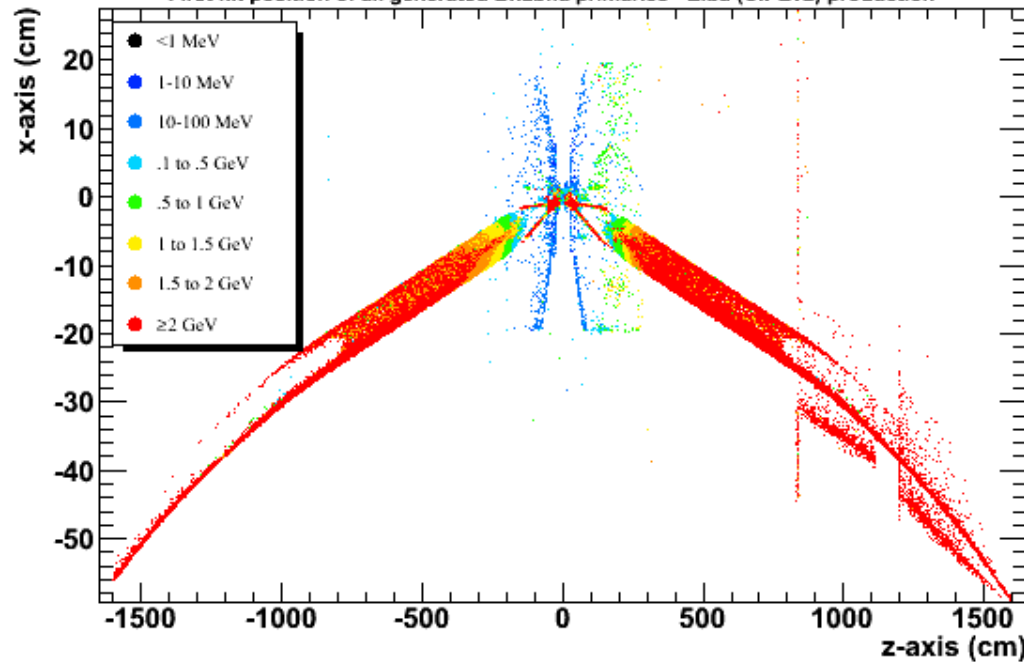
Back-up Slides

ALL final-focus boundary hits

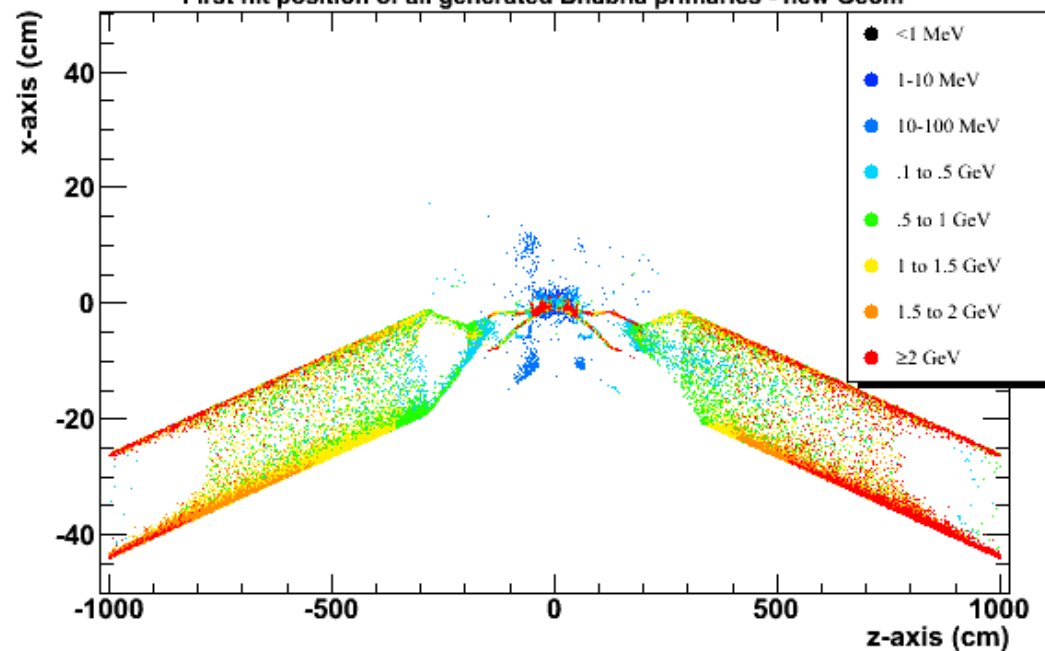


Where Bhabhas First hit the pipe

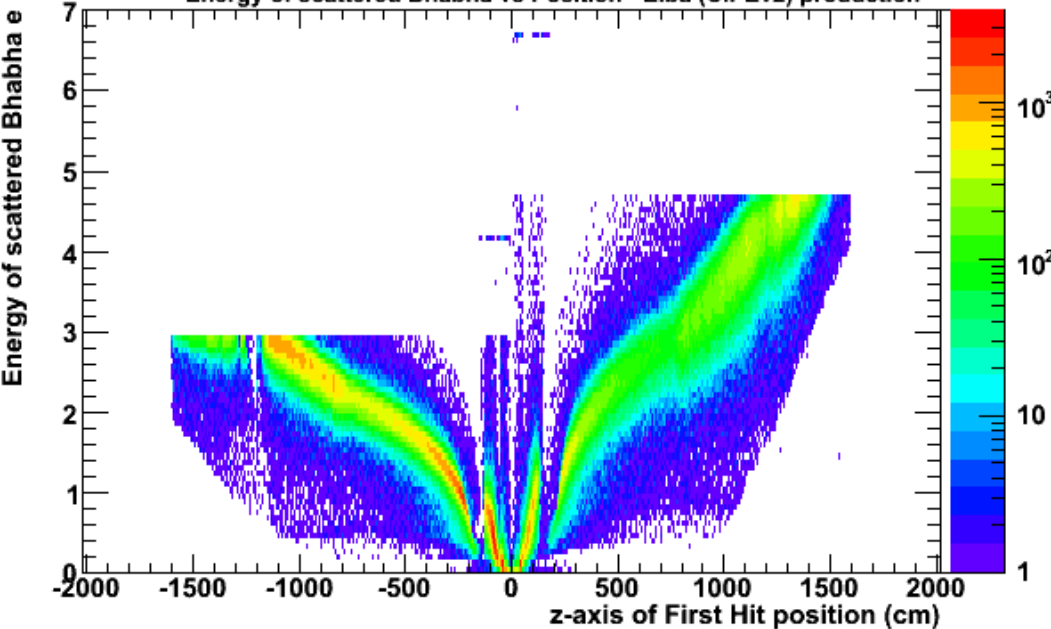
First hit position of all generated Bhabha primaries - Elba (CIPEv2) production



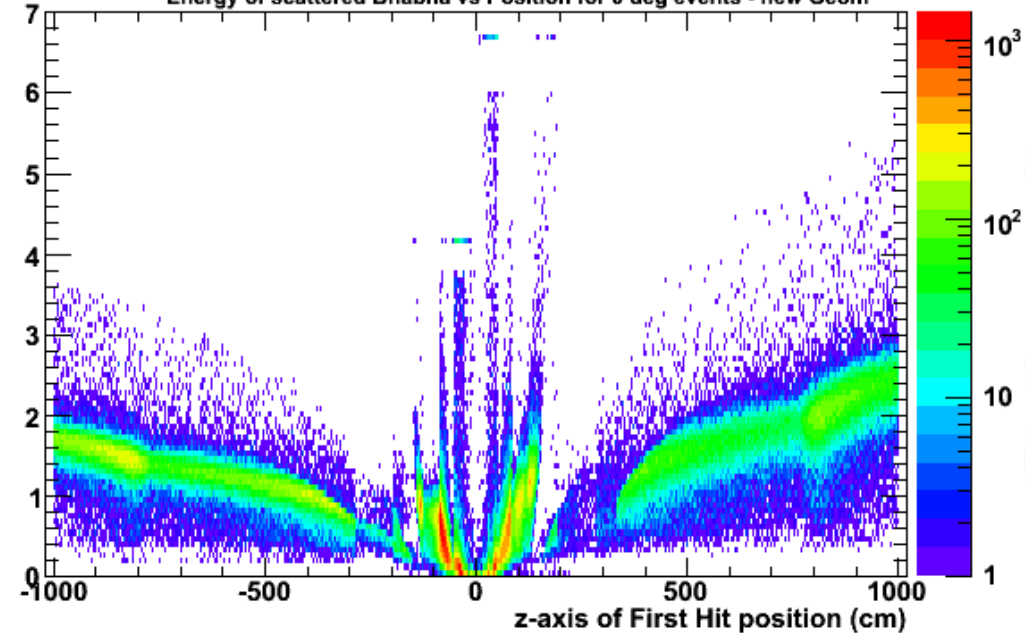
First hit position of all generated Bhabha primaries - new Geom



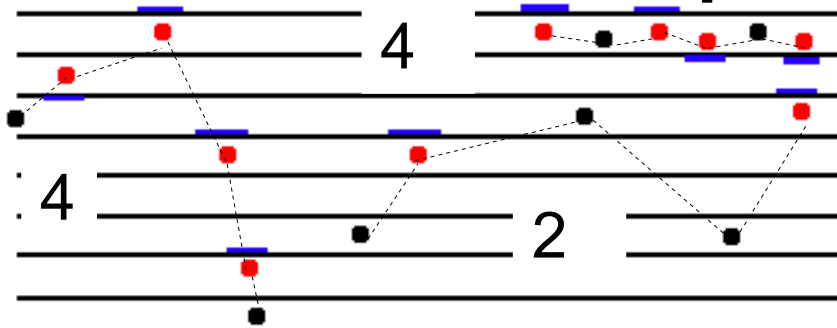
Energy of scattered Bhabha vs Position - Elba (CIPEv2) production



Energy of scattered Bhabha vs Position for 0 deg events - new Geom



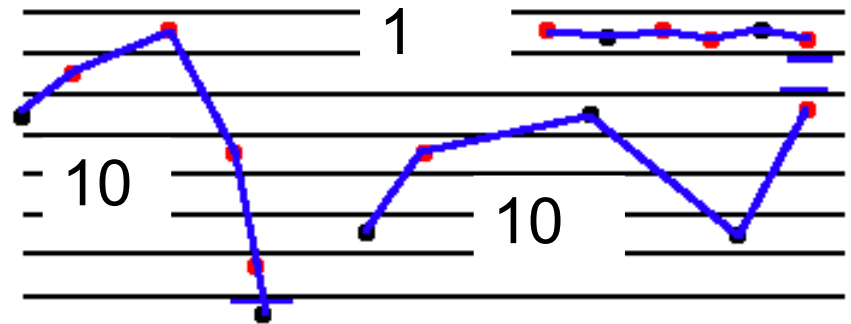
Occupancy Algorithm



Deposited Energy w/o double-counting:

- 1 wire-hit for each hit with deposited $E > 0$
- Uses whichever wire is closest to hit (accounting for phi arrangement)
- Allows only 1 wire-hit per wire per event.
- Does NOT account for stereo wires
- Current “bug”: if hit is closer to boundary than first or last wires, does not count in occupancy
- Doesn't work as well for larger step sizes

- My Bruno occupancies are normalized to ~215 Mhz
- Wire layout is same as Riccardo uses: First superlayer has smaller cell radii



Hit-by-Hit w/o d-c : old method, not used anymore!

Straight lines between ALL hits

1 wire-hit per crossed wire

If no crossed wires, wire closest to first hit.

Allows only 1 wire-hit per wire per event.

