SuperB:
DCH background studies with FullSim

Dana Lindemann - McGill University

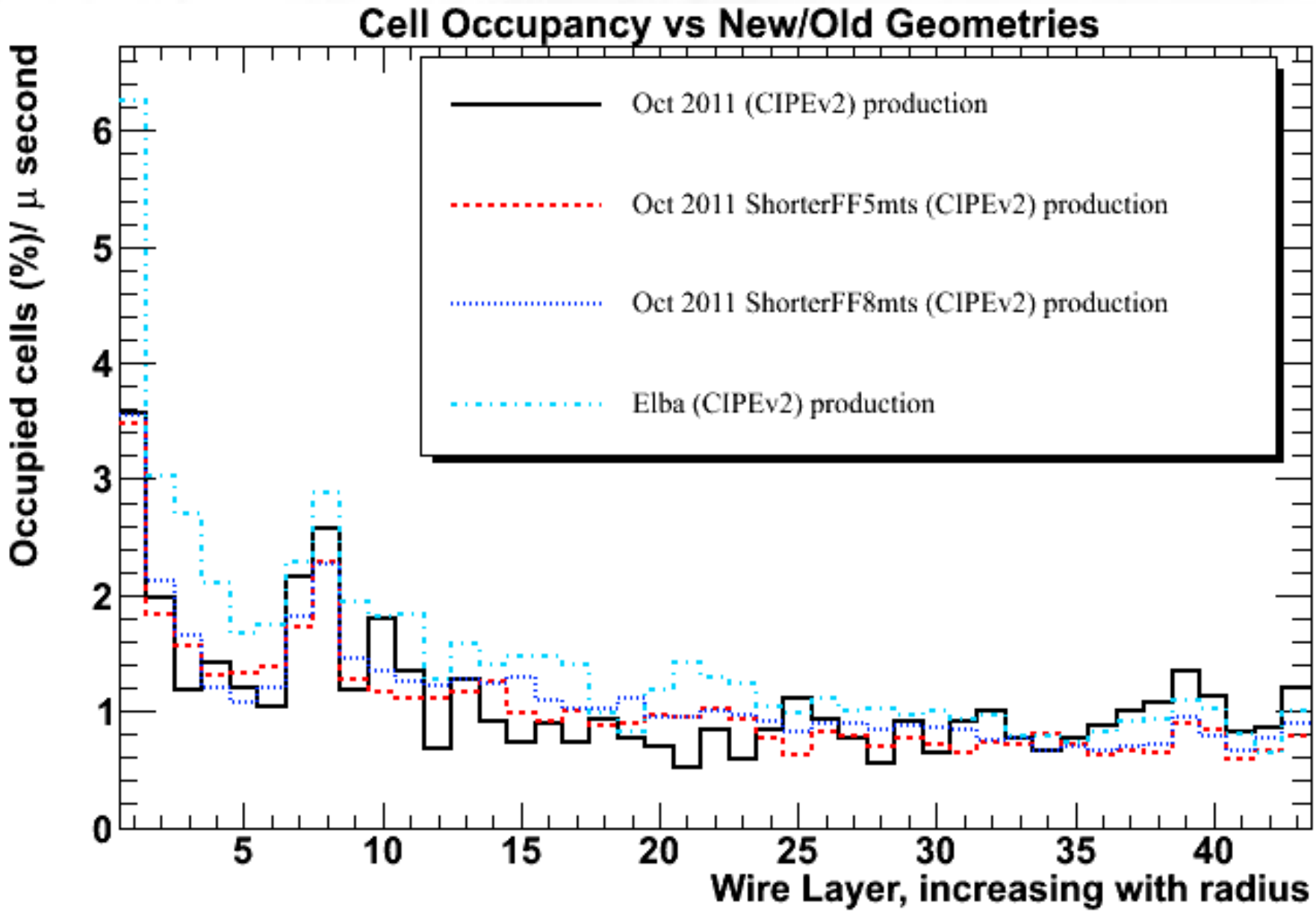
SuperB Backgrounds Meeting

Nov 4, 2011

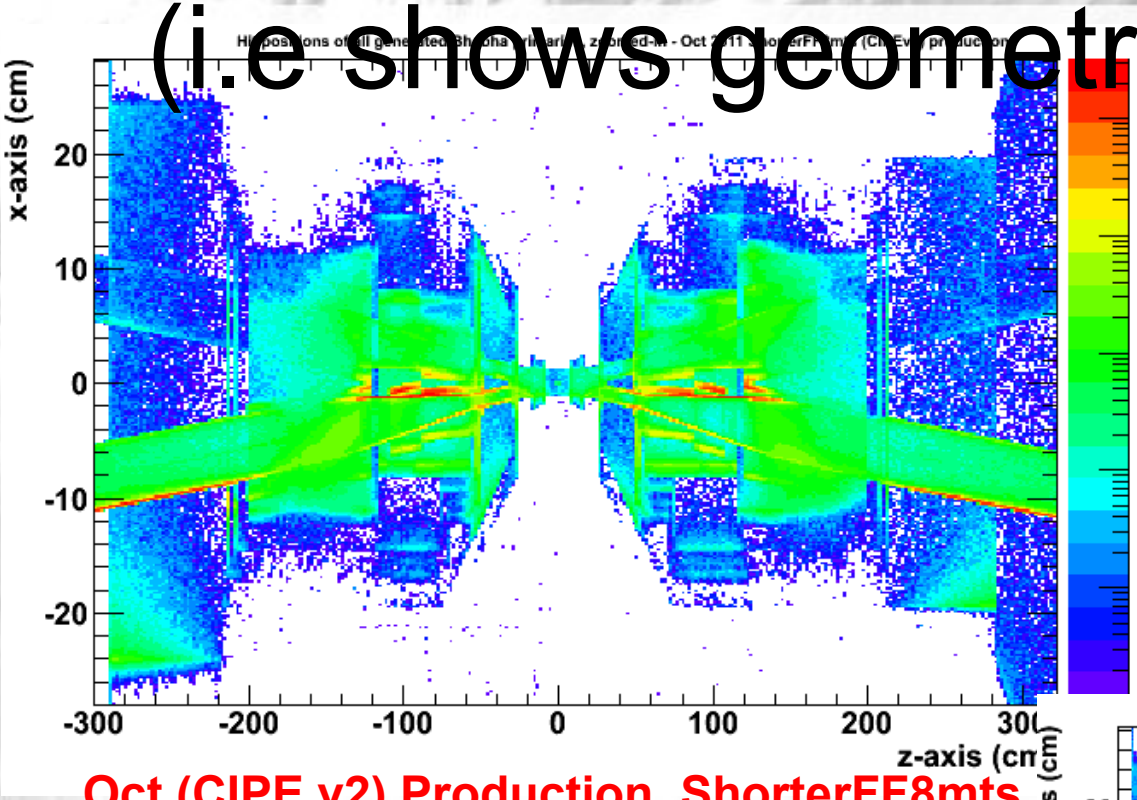
Outline

- New Oct production occupancies compared with Elba
- Touschek occupancies and particle rates

Cell Occupancy

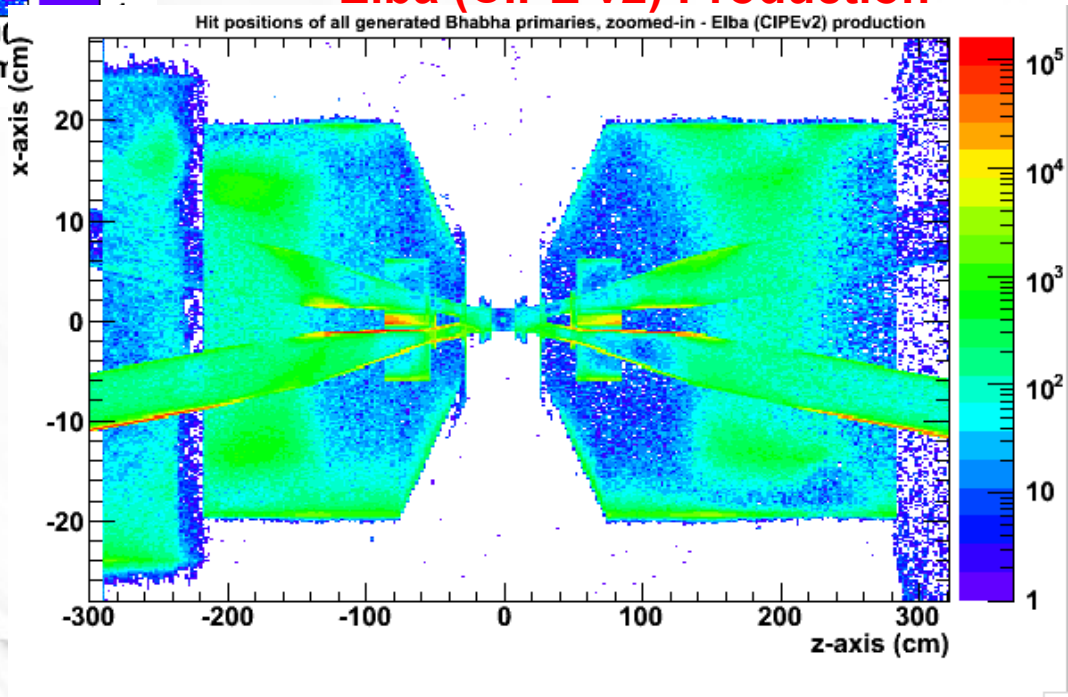


All hits of all primary bhabhas (i.e shows geometry and hotspots)

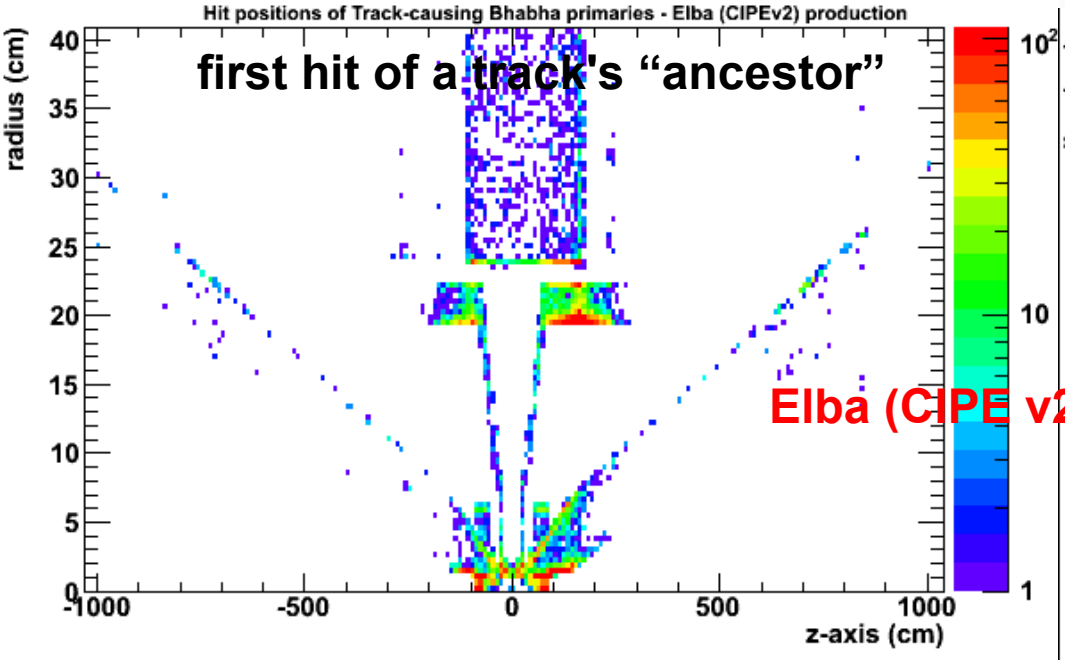


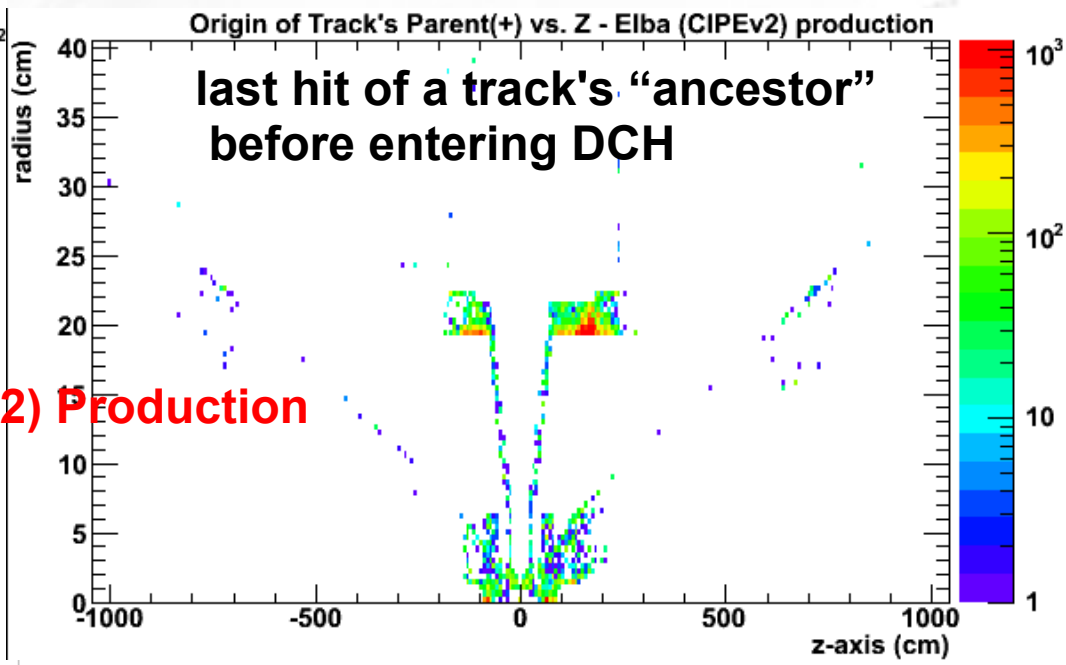
Oct (CIPE v2) Production, ShorterFF8mts

Elba (CIPE v2) Production

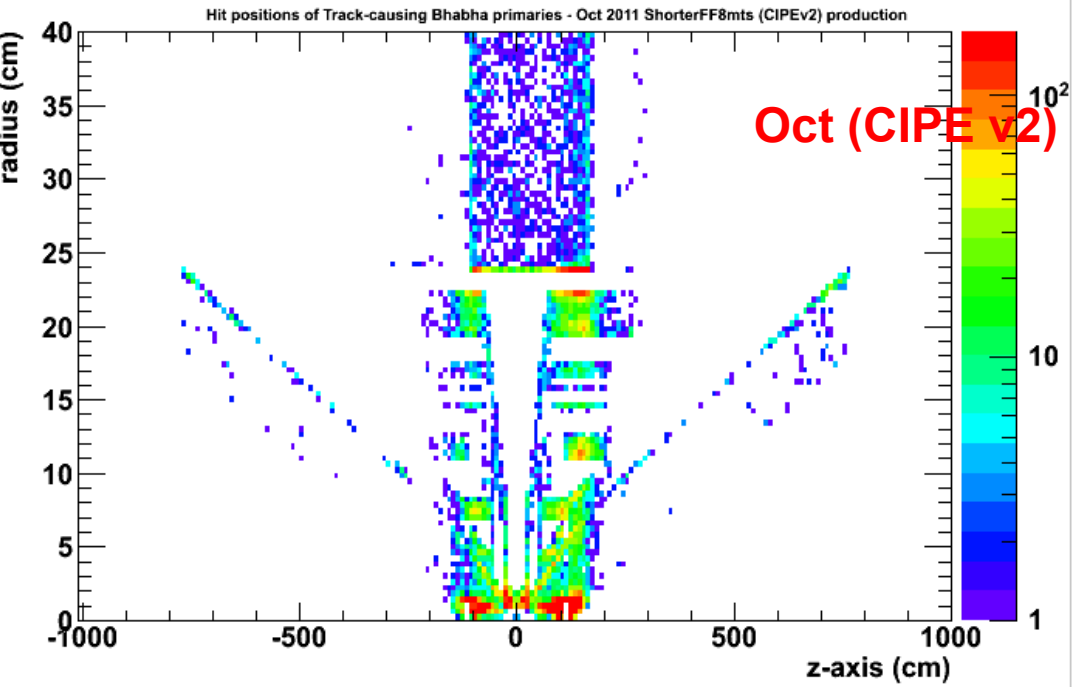


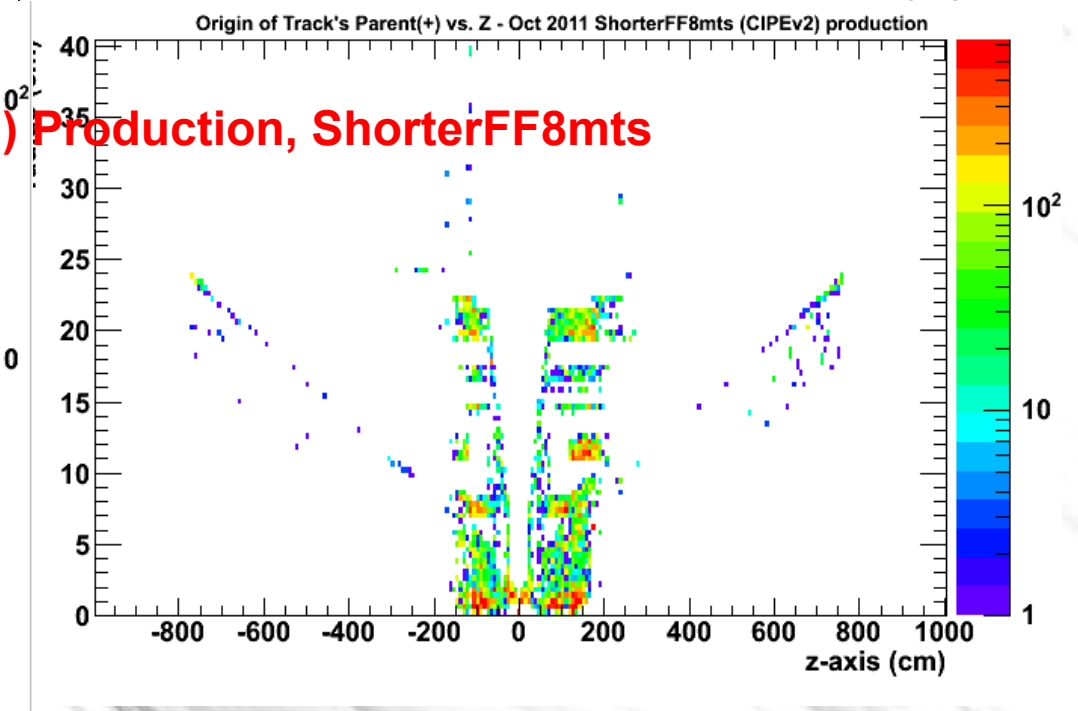
Parent hit locations of DCH tracks





Elba (CIPE v2) Production

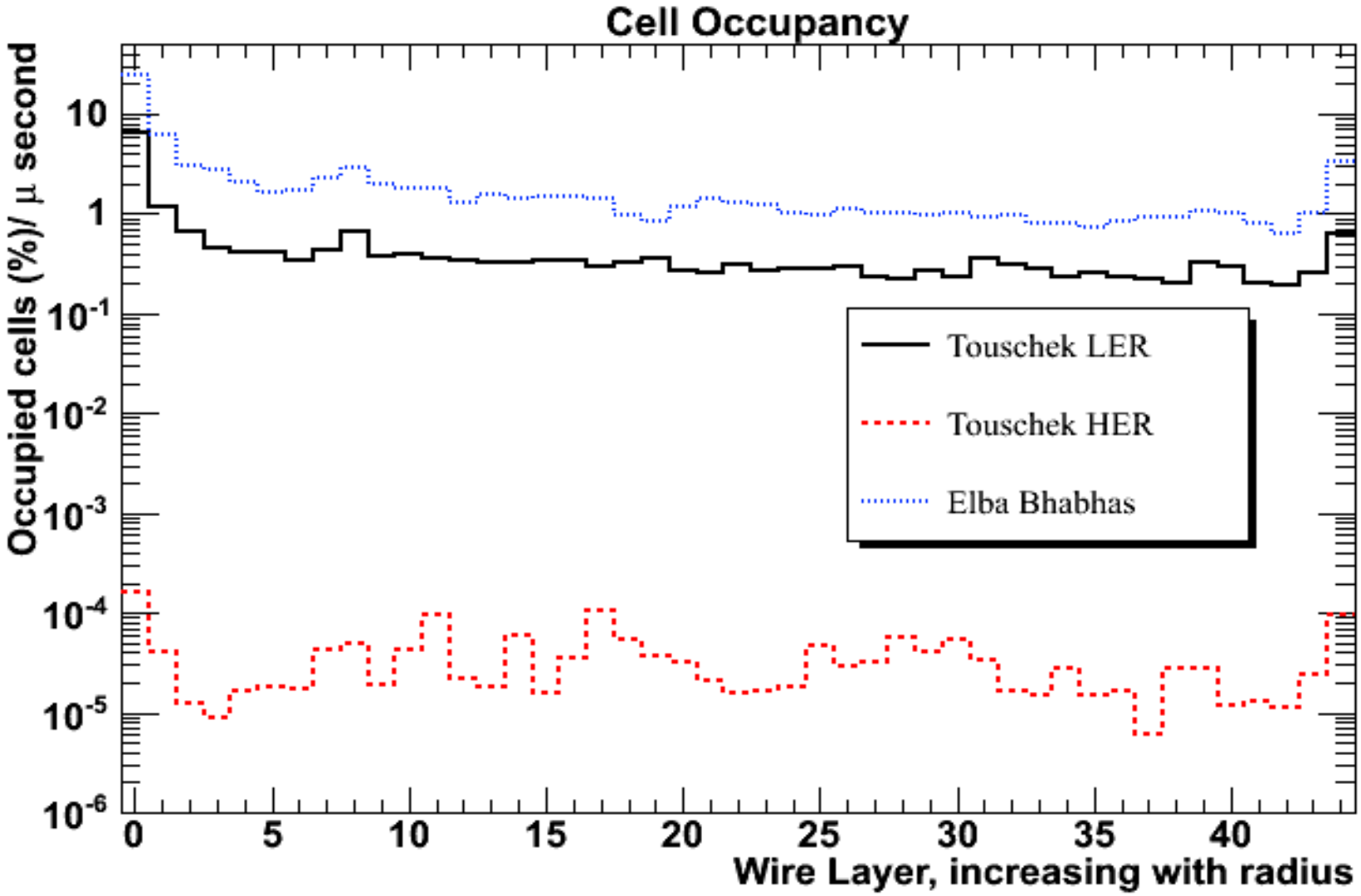




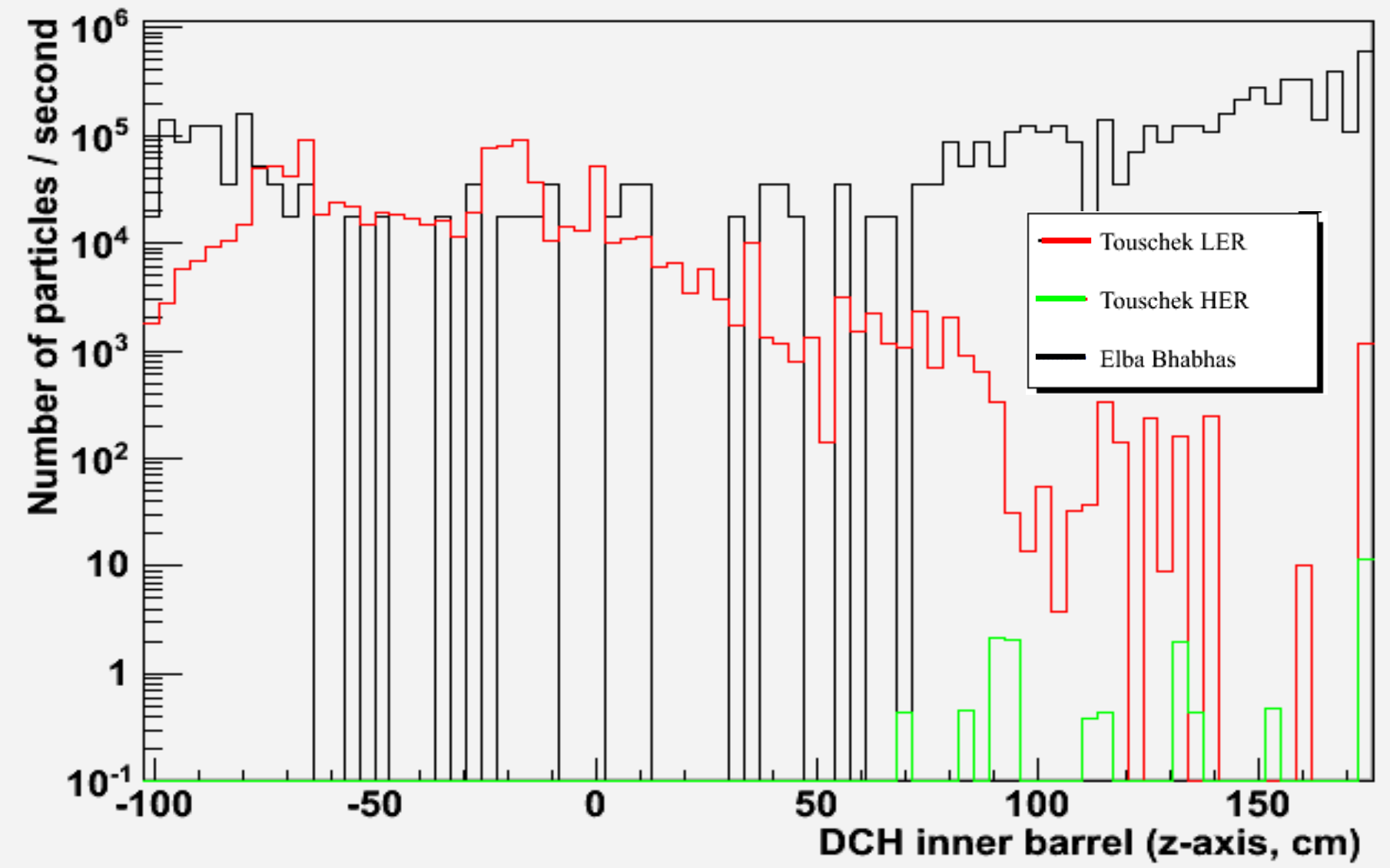
Oct (CIPE v2) Production, ShorterFF8mts

Touschek

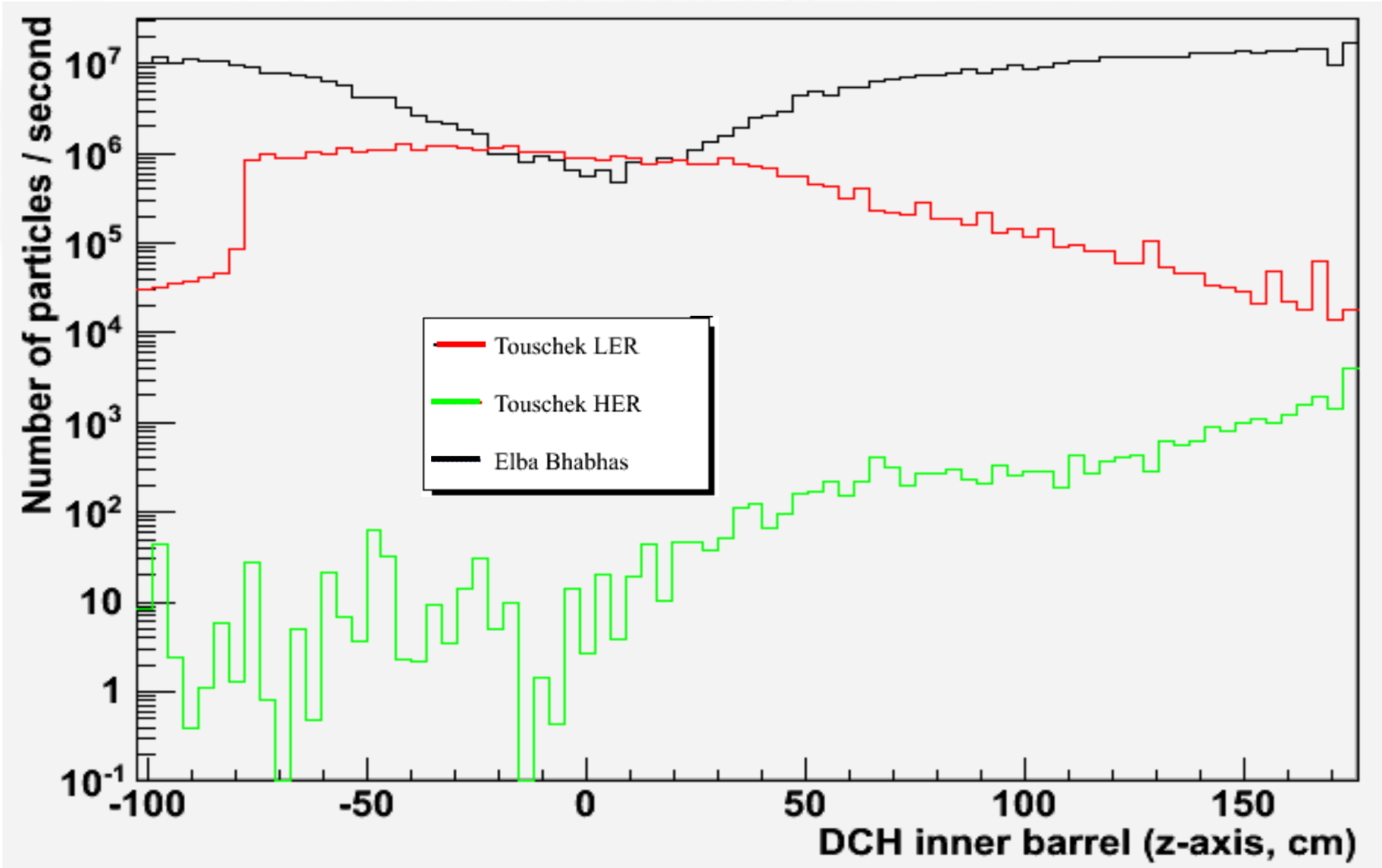
Cell Occupancy for Touscheks



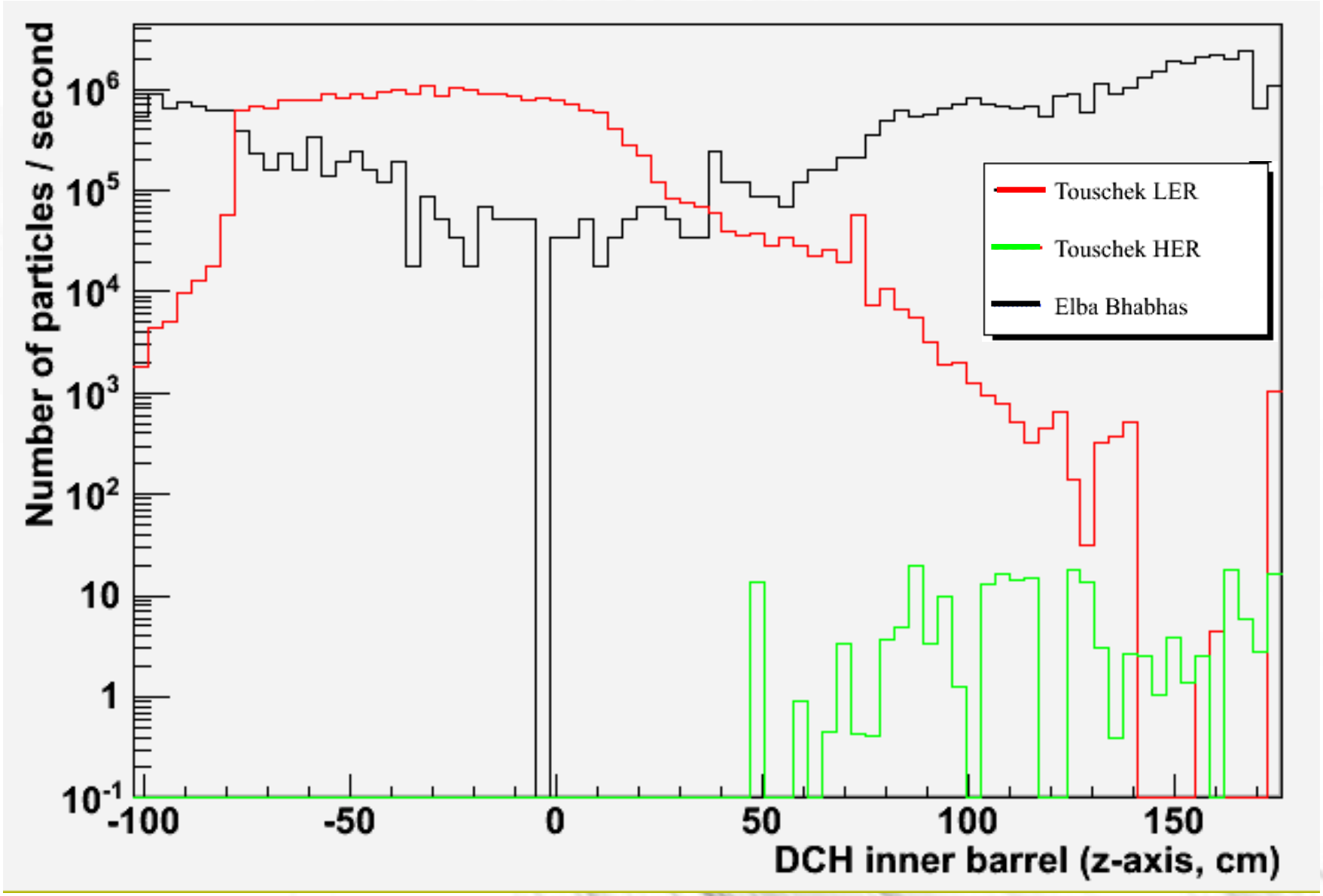
Rate of Charged Particles entering DCH inner barrel



Rate of All Particles > 15 MeV entering DCH inner barrel

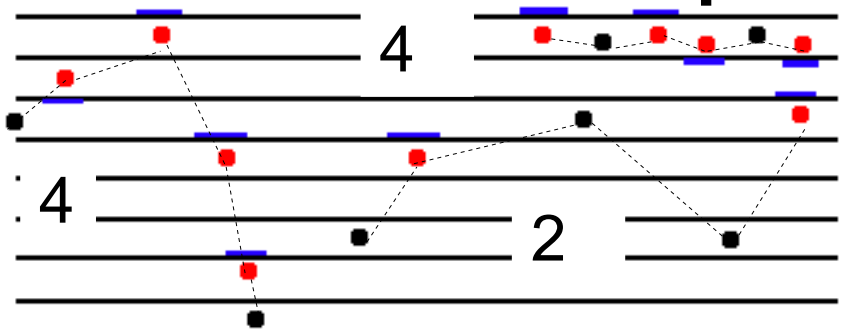


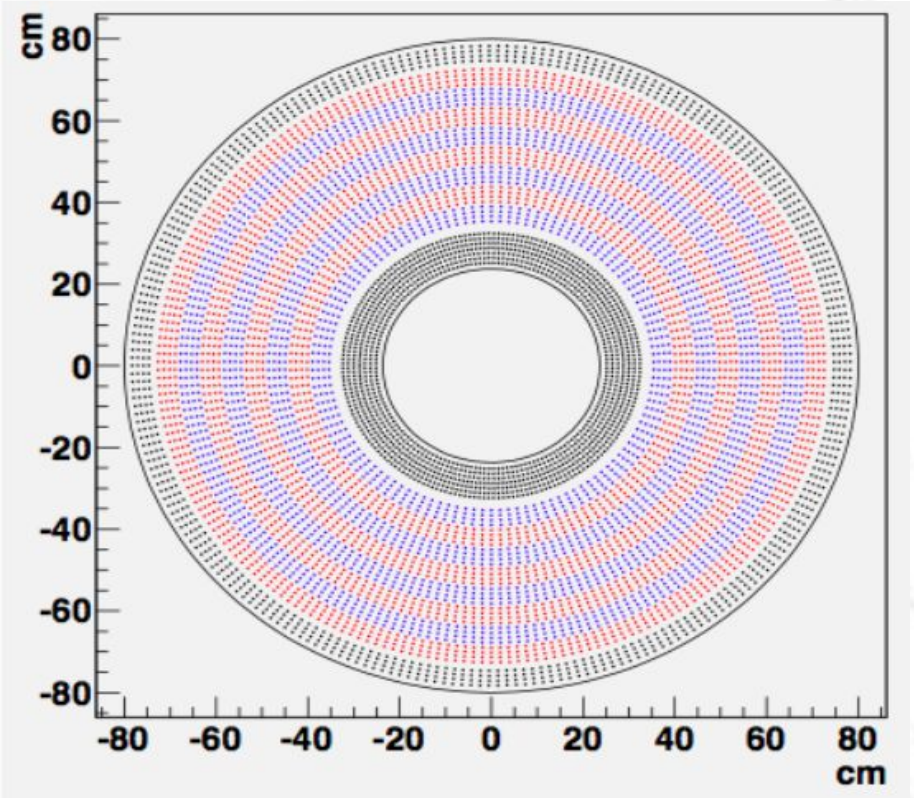
Rate of All Particles < 15 MeV entering DCH inner barrel



Back-up Slides

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 (though this is resembles gaurd wire performance)
- Current "bug": if a wire is hit twice >1microsec later (ie.from neutrons), it isn't double-counted

- My bhabha occupancies are normalized to ~215 Mhz
- My Touschek occupancies are weighted using kHz weight in tuple *978