Target Exit Window nipple: OD 12mm

Back of the envelope calculation

alignment 1mm
raster 5x5 -> 2.5mm on edge, 3.5mm at point.

so 6-1-3.5 = 1.5mm left over

multiple scatter angle width ~ 13 MeV/ 11 GeV ~ 1mrad. Target length 1250 mm, so from front the deviation at the target exit window is 1.2mm.

so target window is:

- ~1-sigma in multiple scattering width from raster area point at target US end. (1.5mm space, 1.2mm multiple scattering width)
- ~2-sigma if not counting for misalignment, or counting from the edge rather than point of the raster
- ~2-4 sigma if counting from the target middle rather than upstream end.

Scattering chamber window OD 15mm

more or less similar, with distance from target end 1500mm and distance=874 mm from target middle

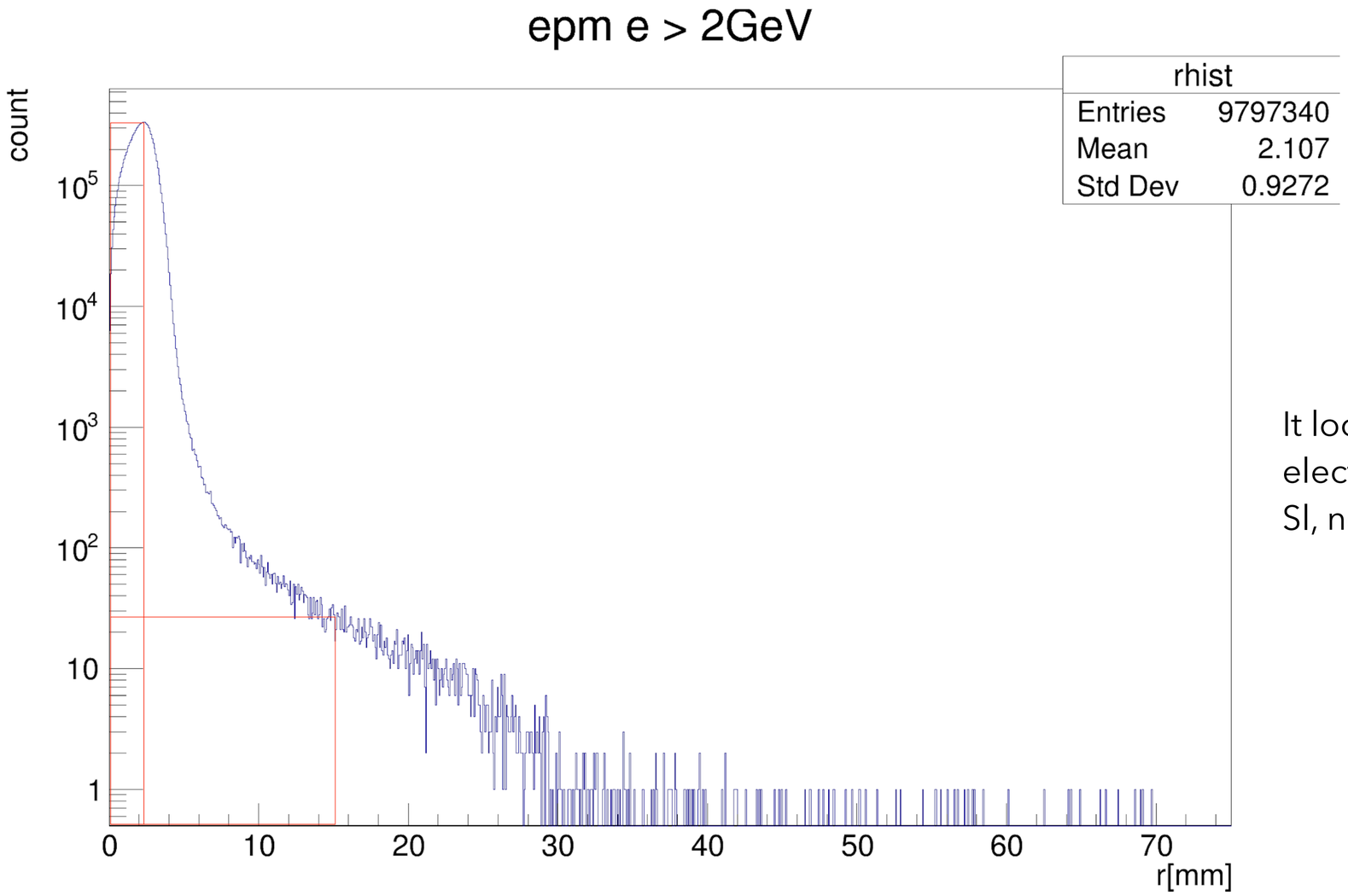
alignment 1mm
raster 5x5 mm -> 2.5mm on edge, 3.5mm at point.

so 7.5 - 1 - 3.5 = 4mm left over space.
1500mm*1mrad = 1.5mm so:

- ~2-3 sigma from upstream target end
- ~3-sigma if not counting for misalignment, or counting from the edge rather than point of the raster
- ~4 sigma if counting from the target middle rather than upstream end.

See next slide for simulation result

At scattering chamber exit window



It looks like rate of potential background-creating electrons>15mm is >3σ, <4σ.
SI, not so far from back-of-envelope calculation.