Plots from the LUXE Background: Tracker System: JETI40 ω 0 3000nm (Part 3)

Arka Santra

Weizmann Institute of Science

October 30, 2020

Arka Santra

Plots from Tracke

1 / 25

- Made the tracker plots from Sasha's code.
- Ran on the GEANT4 samples available on the DESY (9508 BXs) for w0_3000nm JET140.
- No cut on vertex position or projection to magnet aperture.
- Prepared separate background and signal plots.
- One can read off the total events in a plot from the legend entry.

• XY position of tracks, normalized to BX

tracking_planes_track_xy_electrons (signal+background)



tracking_planes_track_xy_positrons (signal+background)



tracking_planes_track_xy_gamma (signal+background)



• vtx_z positions, normalized to BX



tracking_planes_vtx_z (signal and background)



Arka Santra

Plots from Tracke

• vtx_x vs vtx_z positions, normalized to BX

tracking_planes_vtxz_vtxx_electrons (signal+background)



tracking_planes_vtxz_vtxx_positrons (signal+background)



tracking_planes_vtxz_vtxx_gamma (signal+background)



• vtx_y vs vtx_z positions, normalized to BX

tracking_planes_vtxz_vtxy_electrons (signal+background)



tracking_planes_vtxz_vtxy_positrons (signal+background)



tracking_planes_vtxz_vtxy_gamma (signal+background)



• 1D occupancy plots, in X normalized to BX

tracking_planes_background_track_x, all particles, signal and background



• 1D occupancy plots, in Y normalized to BX

tracking_planes_background_track_y, all particles, signal and background



• track energy plots normalized to BX

track_e, signal positrons, and all particles for background





track_e, all particles for background (zoomed)





track_e, all particles for background (more zoomed)











- Signal and background plots are made.
- Gamma constitutes the biggest background, then comes electron.
- Some positron backgrounds have low energies.