Displaced Vertex

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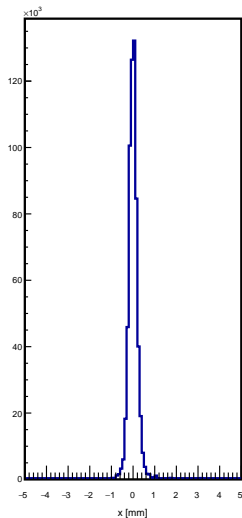# Secondary Vertex Finder: Nature of the Study

Relations between `secondary` and `primary` vertex

- Implemented the `ACTS::AdaptiveMultiVertexFinder`
- Feed in `CentralTrackVertices`, `ReconstuctedParticleCollection` & `Trajectories` from the primary vertex `IterativeVertexFinder`
- I would like to read in `TrackParameters`: currently does not work
- Using two track vertices: K^+ & π^-
- Presented some rudimentary displaced vertex (x, y, z)
- **Need help figuring out PCA between two-tracks**
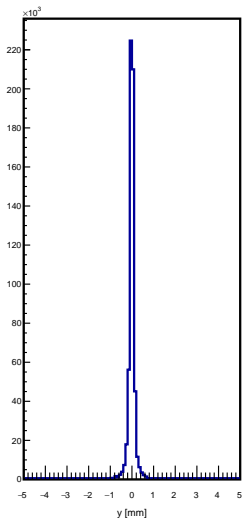- Input file: enriched D^0 sample
  `pythia8NCDIS_18x275_minQ2=10_beamEffects_xAngle=-0.025_hiDiv_1.hepmc3.MC.root`
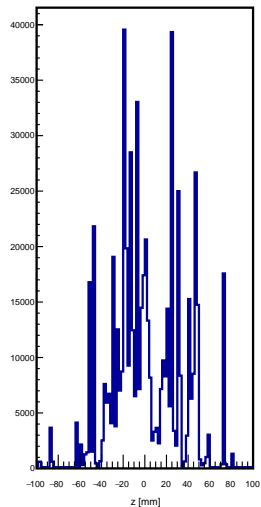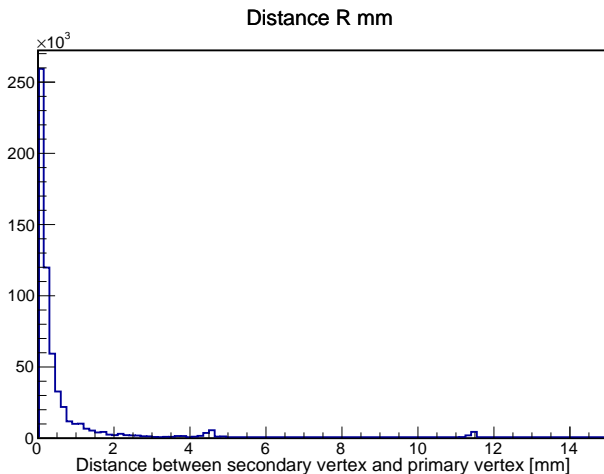
Secondary Vertex

Secondary vertex x [mm]

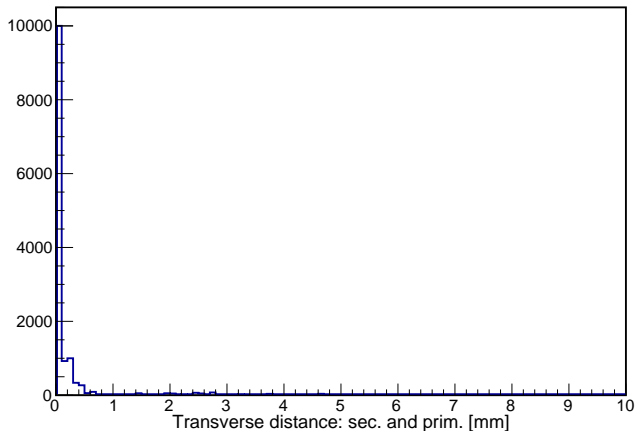Secondary vertex y [mm]

Secondary vertex z [mm]

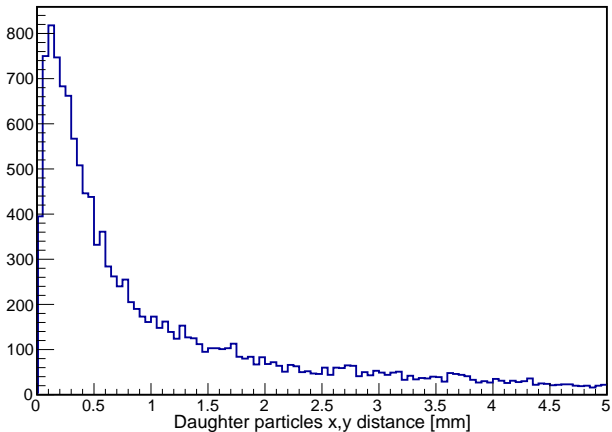# 3D Distance between Secondary & Primary Vertex

Distance R mm

Transverse distance travelled by decay particle

Transverse distance: (K, π cut)

Transverse distance between daughter paricles: (eventually PCA)

Distance in transverse plane [mm]

Daughter particles x,y distance [mm]

- This is really surface distance of two-tracks: `loc_a,b`
- Apply PCA condition between two-tracks

ΔZ: $(Z_{sec} - Z_{prim})$