

# Goals

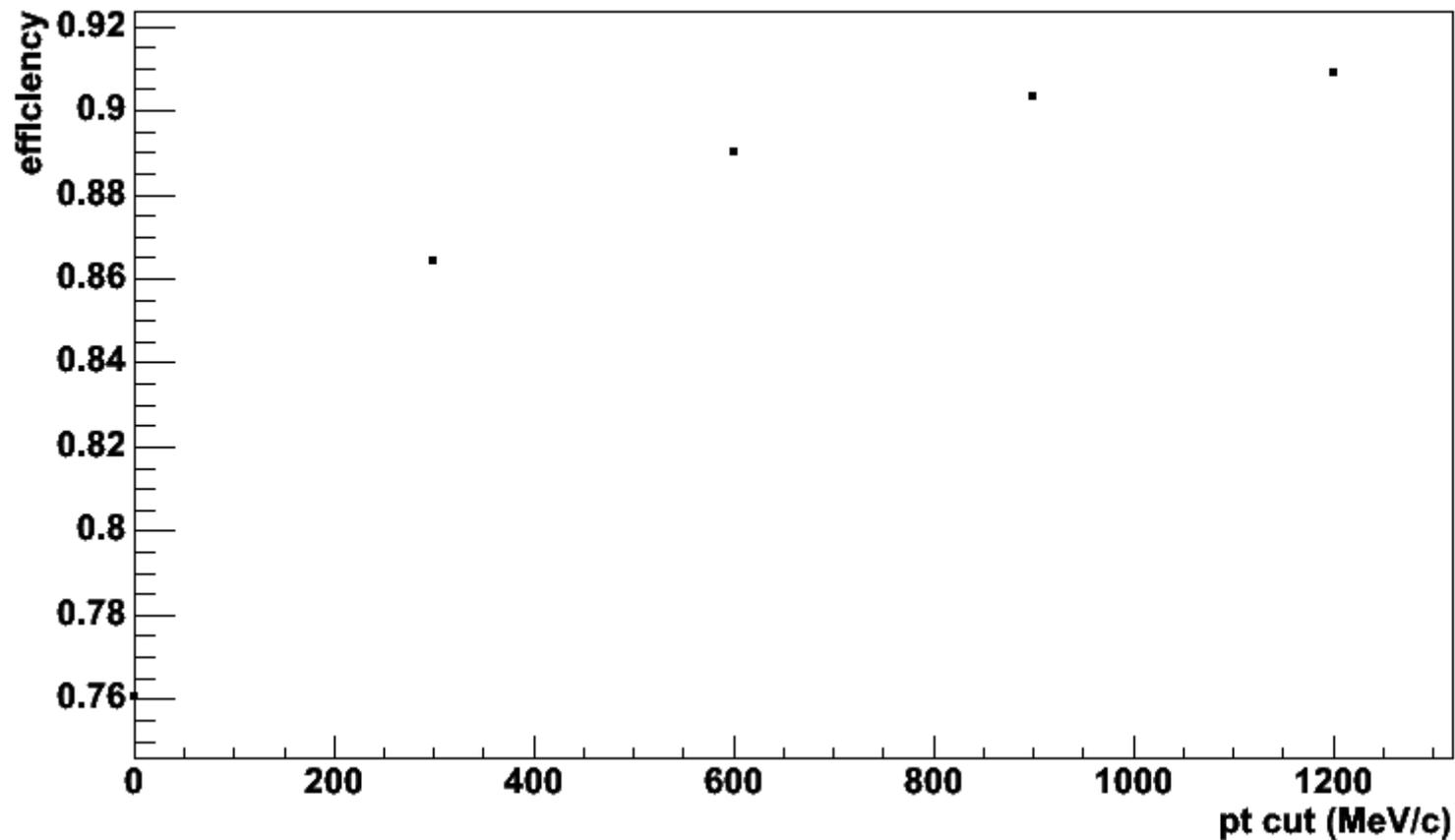
- Reconstruct track candidates in the SVX Barrel
- Find the Collision Vertex
- Use vertex to find secondary track candidates
- Compare candidates to tracks in central arms

## Short-Term Goals

- Reconstruct tracks from charm decay in Pythia
- Find correction factor for determining  $p_T$  in barrel, and find momentum resolution
- Find mass spectrum of charm decay

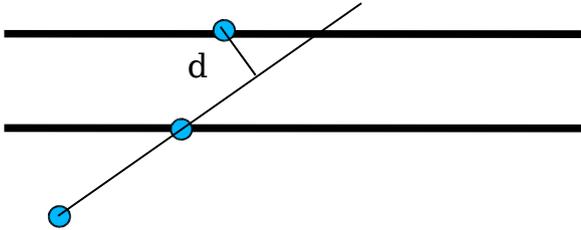
# What has been done

- Found initial vertex position using Minuit
- Reconstructed tracks in barrel
- Find  $x, y$  vertex again using reconstructed tracks



# The Algorithm

- Minimize Summed-Gaussian-Widths function to find the vertex

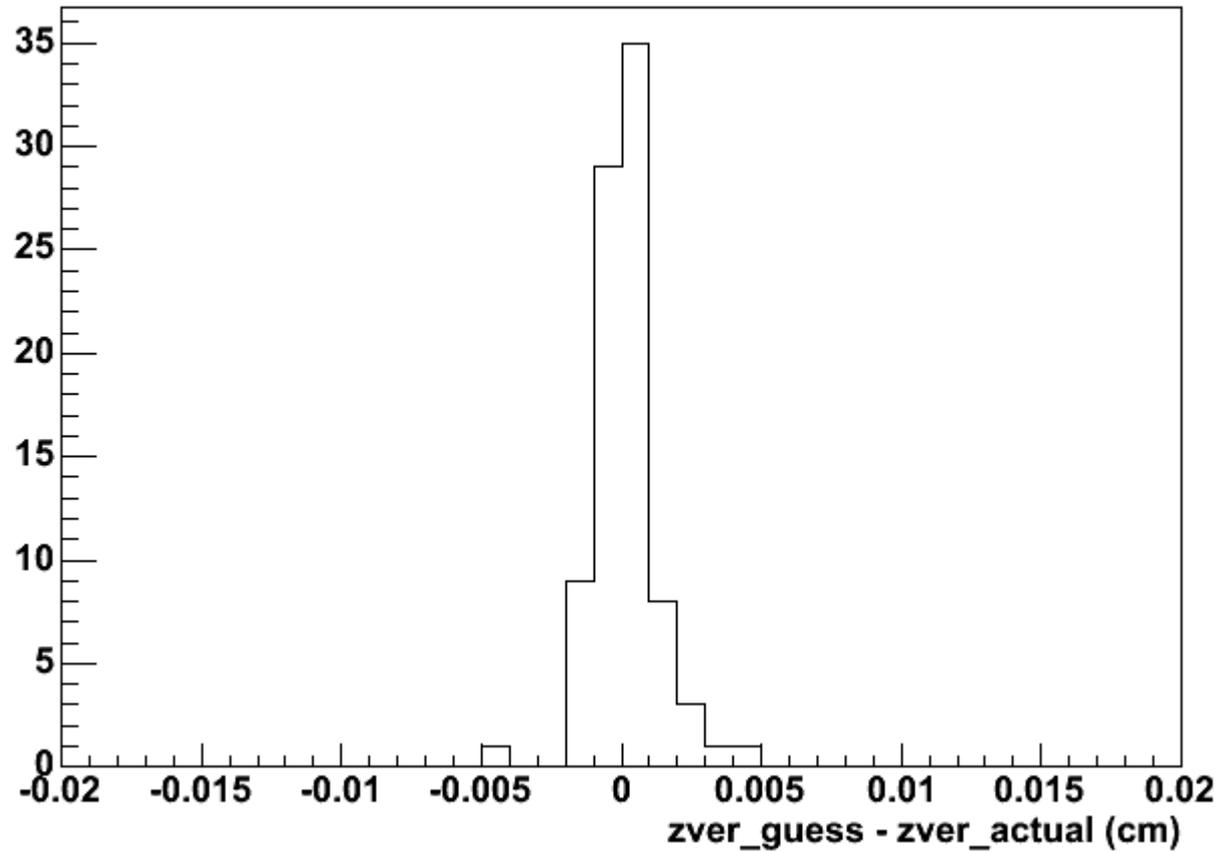


$$S(x_v, y_v, z_v) = -\sum_i \exp\left(-\left(\frac{d_i}{2\sigma}\right)^2\right)$$

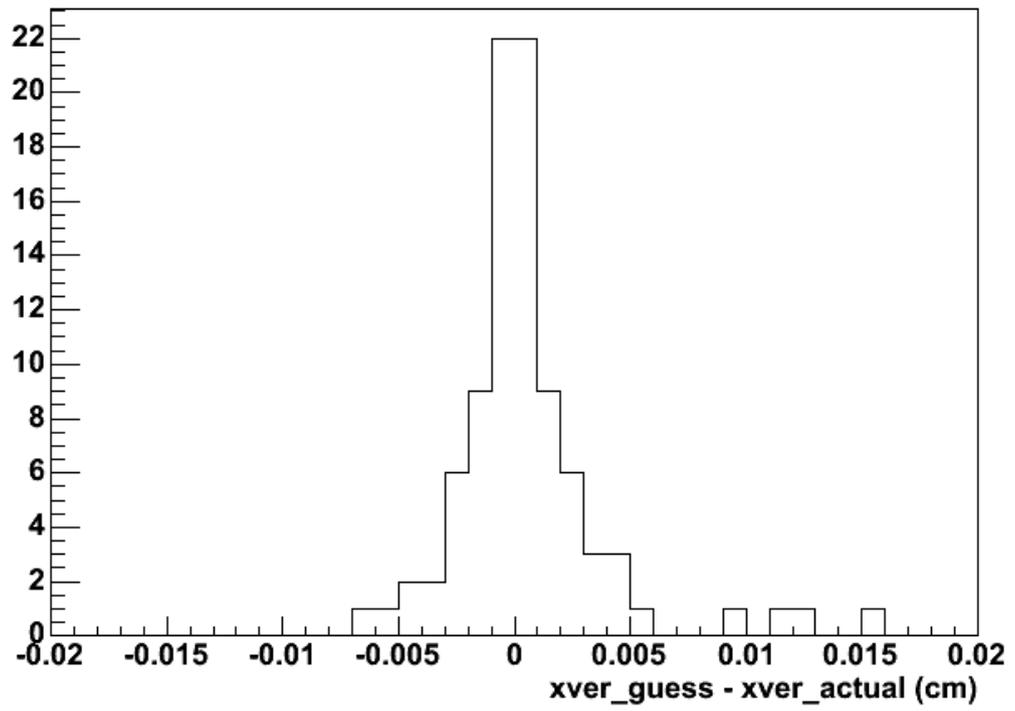
- Take vertex and two (reasonably selected) hits in the inner layers. Try to fit a helix through the 3 points. If helix fits, then fit the helix to outer layers. If helix still fits, we have a candidate.
- Take hits from each of the inner layers and one outer layer, and repeat above to get secondary candidates. Make a dca cut on the candidates to only select tracks with a partner.

# Vertex Resolution

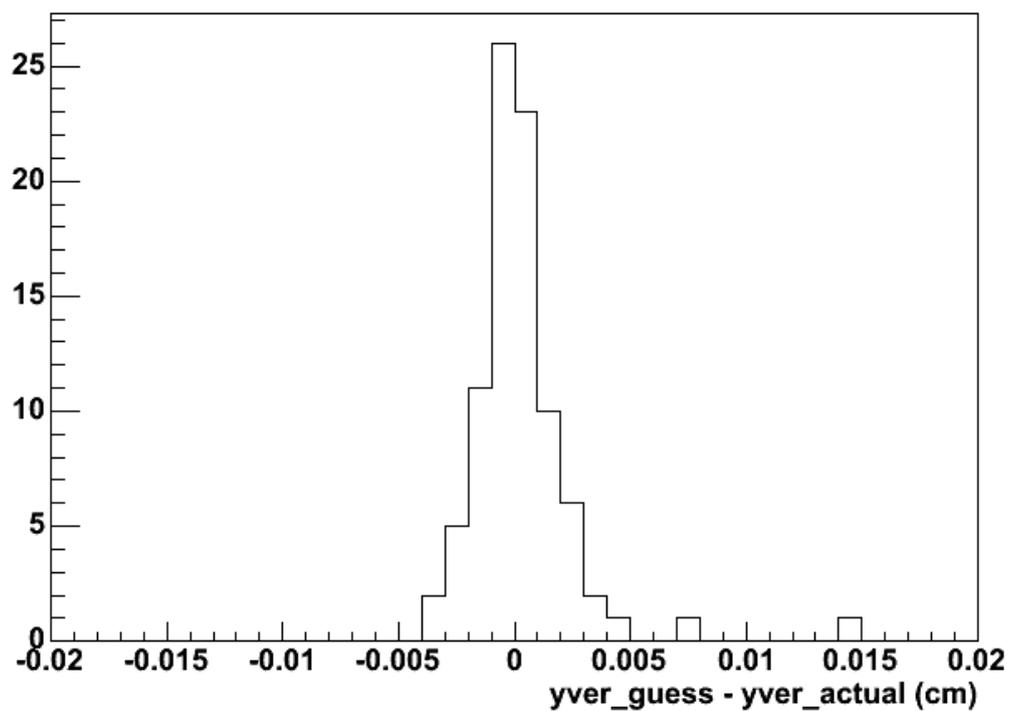
zres



xres

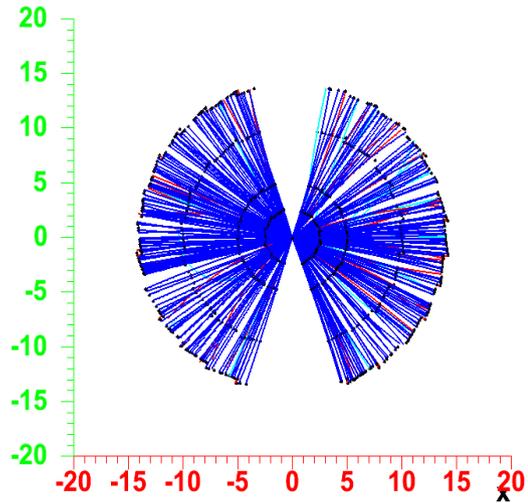


yres

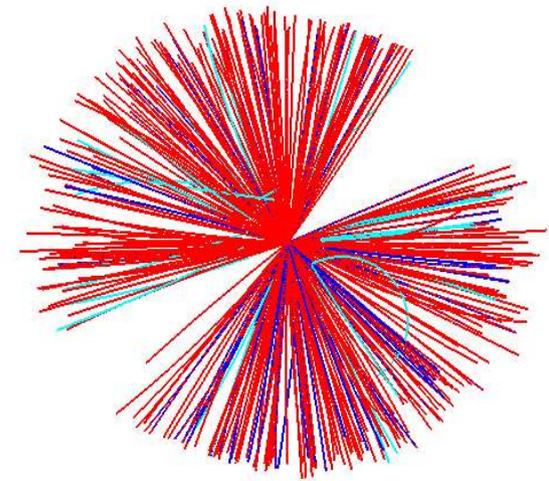
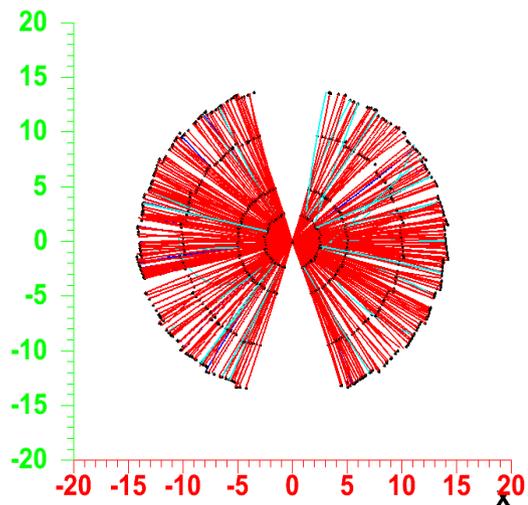


# Event Display

Dark Blue=reconstructed track  
Red=real primary track  
Light Blue=real secondary track



TPad



OpenGL