

$B \rightarrow D^{*+} D^{*-}$ optimisation study: first results

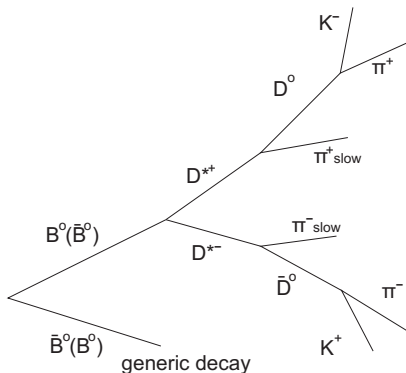
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Evo meeting, 02.03.2010

Decay used in this benchmark study

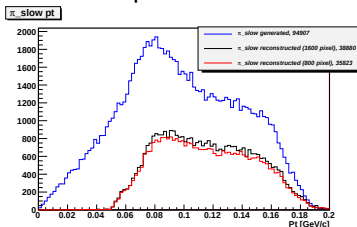
- Decay channel from the .HEPEvt file
- Simulation and reconstruction performed within the ILC-Framework
- 40 000 $B^0 \bar{B}^0$ pairs generated
- D^{*-} and B -Reconstruction without vertex fit



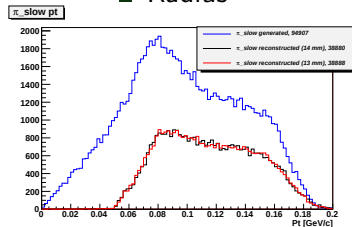
Reconstruction efficiency (π_{slow})

- Comparison between baseline (50 μ m, 1600 pixel, 14 mm radius) and variations

- Number of pixel

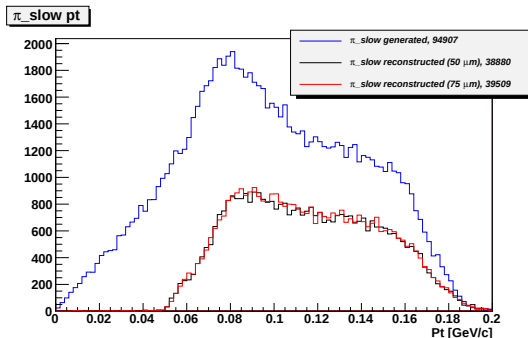


- Radius



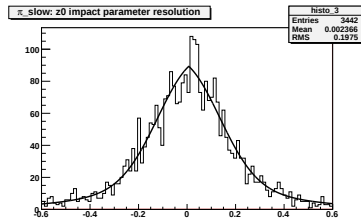
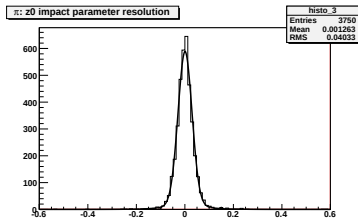
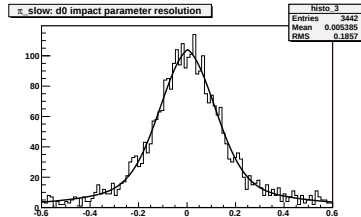
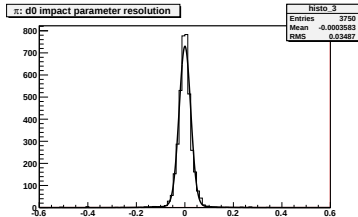
Reconstruction efficiency (π_{slow})

■ Thickness



Impact parameter resolution

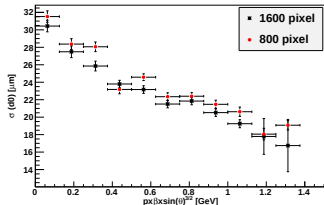
- d0 and z0 resolution for the π from D^0 decay and the π_{slow} from D^* decay



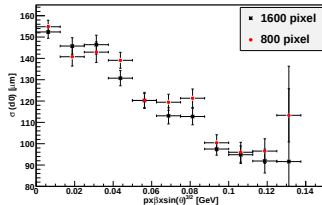
Impact parameter resolution

■ Number of pixel

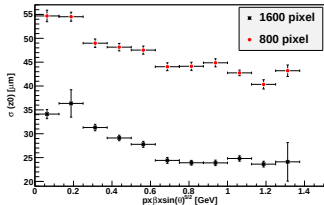
π^- d0 impact parameter



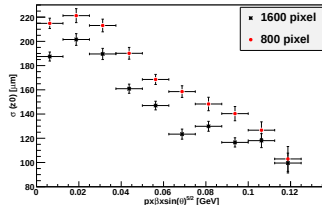
π^- slow: d0 impact parameter



π^- z0 impact parameter



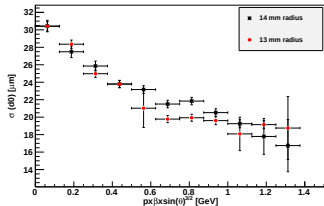
π^- slow: z0 impact parameter



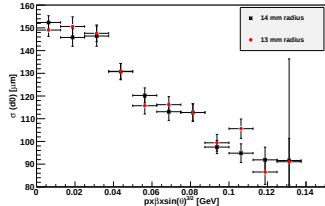
Impact parameter resolution

Radius

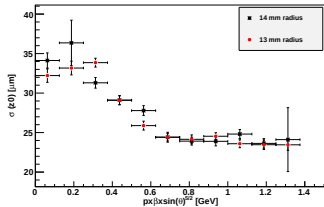
π^- d0 impact parameter



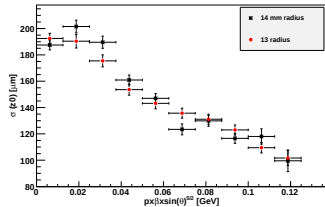
π^- slow: d0 impact parameter



π^- z0 impact parameter



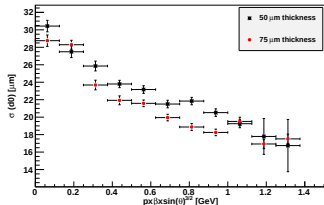
π^- slow: z0 impact parameter



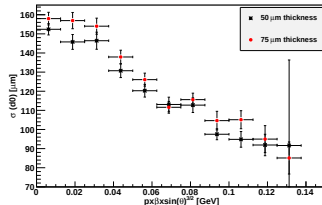
Impact parameter resolution

■ Thickness

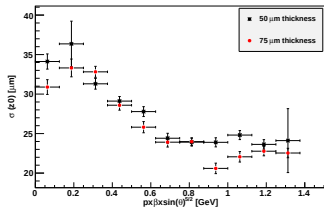
π^- d0 impact parameter



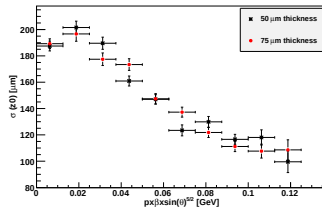
π^- slow: d0 impact parameter



π^- z0 impact parameter



π^- slow: z0 impact parameter





- ILC-Framework installed and running in Karlsruhe (aim: use it for developping a new tracking software for Belle II)
- First analysis of the $B \rightarrow D^{*+} D^{*-}$ possible now

Still to do:

- Test all geometry models
- Generate sample with more events to reduce statistical errors
- Improve the reconstruction