

BESIII Oxford Group Meeting

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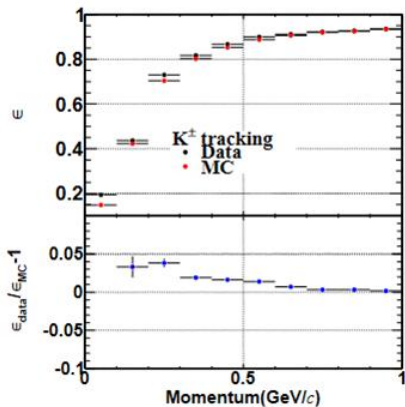
Oxford LHCb

27th January 2022

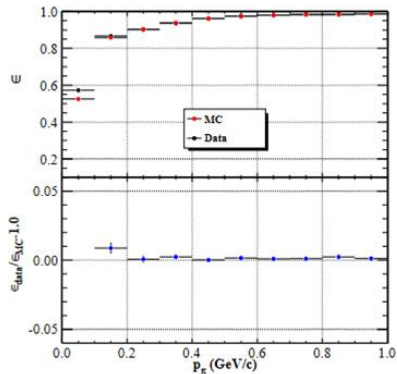


- Kaon efficiency very poor in 4-body modes
 - $\pi\pi\pi\pi$: 49%
 - $K\pi\pi\pi$: 37%
 - $KK\pi\pi$: 18%
- 2-body modes do not show this trend:
 - $\pi\pi$: 69%
 - $K\pi$: 67%
 - KK : 64%

Tracking efficiencies



(a) K^\pm tracking efficiency

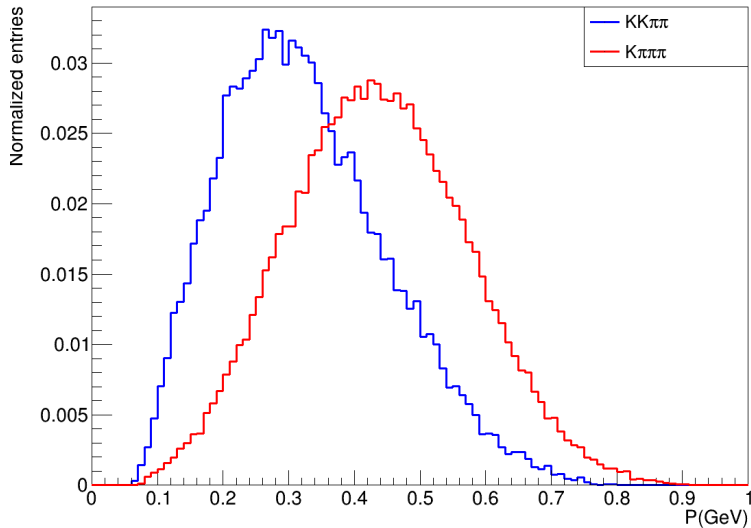


(b) π^\pm tracking efficiency

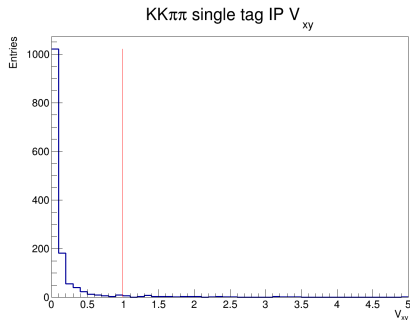
Maybe kaons get caught by magnetic field in MDC and decay?

Softer kaon momentum in $KK\pi\pi$

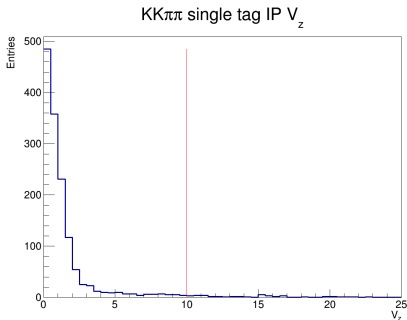
$KK\pi\pi$ and $K\pi\pi\pi$ kaon momentum



Study IP cuts



(a) Kaon V_{xy}

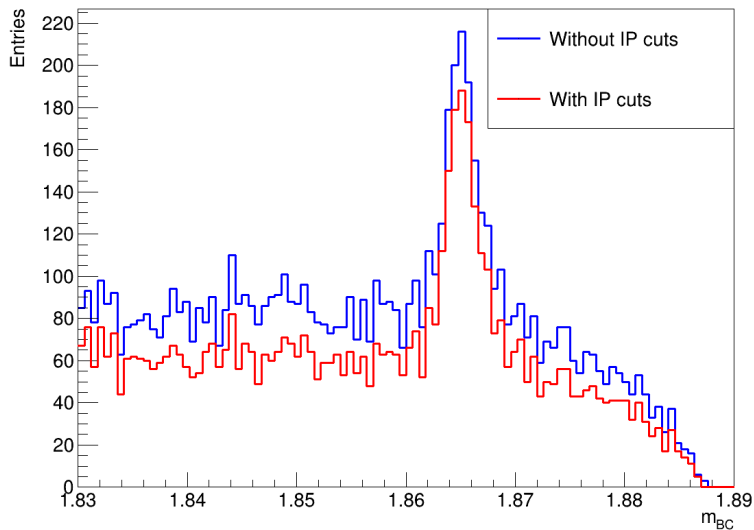


(b) Kaon V_z

Removing IP cuts increases yields by 4.4%
Almost no change in tag efficiency...

Larger backgrounds without IP cuts

$KK\pi\pi$ inclusive MC



Conclusion

- Minor gains from loosening IP cuts
- Instead: Partially reconstructed tag $KK\pi\pi$ where K^\pm is missing
- Especially important for $K_S\pi\pi$ tags