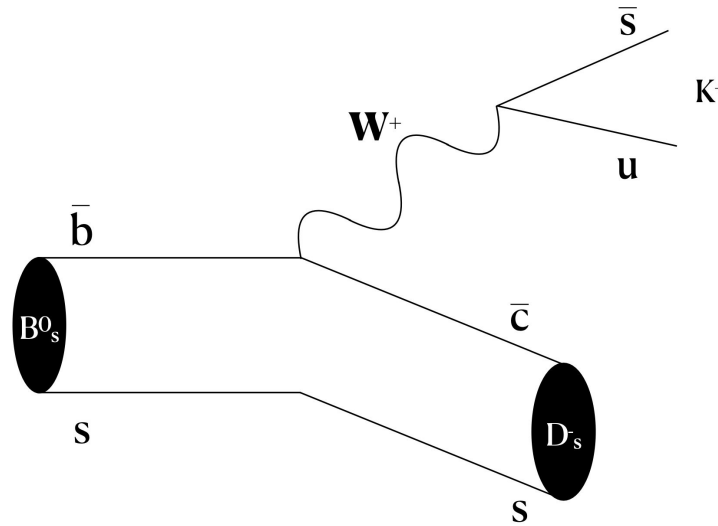# Bs2DsK reprise

Andrea Coccaro && Fabrizio Parodi

Introduction

$$B_s^0 \rightarrow D_s^{\pm} K^{\mp} \rightarrow (KK\pi^{\pm}) K^{\mp}$$

- First observation by CDF (arXiv); benchmark physics analysis for FCC-ee
- Benefiting from previous work by F. Cuna && M. Scodeggio (thanks!)

Introduction

- Focusing on simulated events of this exclusive B decay at the Z pole
- Using Pythia and centralised production
- Getting familiar with ROOT::RDataFrame and FCC software tutorials
- Some initial work for running the analysis code
    - Fixed interfaces with ReconstructedParticle
    - correct MC links to reco particles

Mass plots
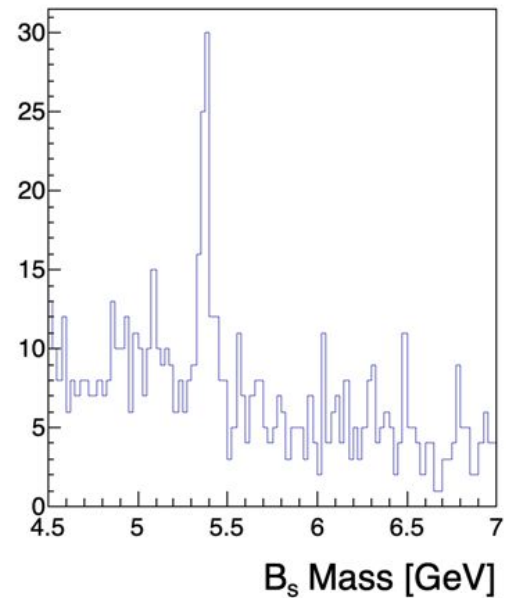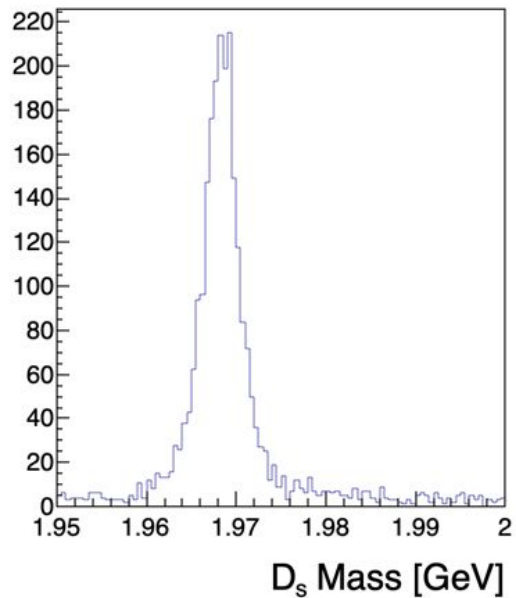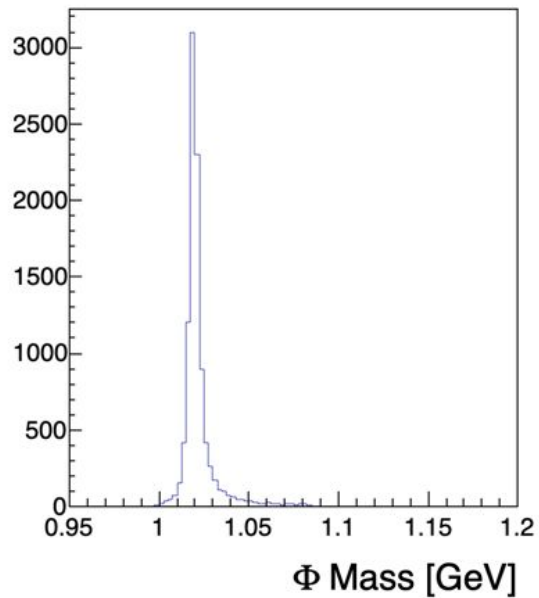
Vertex resolution plots

- First look to the true-candidate Ds vertex
- Sensible results: 40um in xy direction, 50um in z
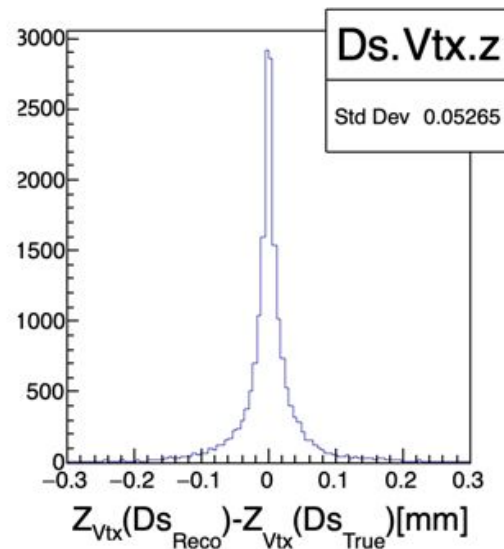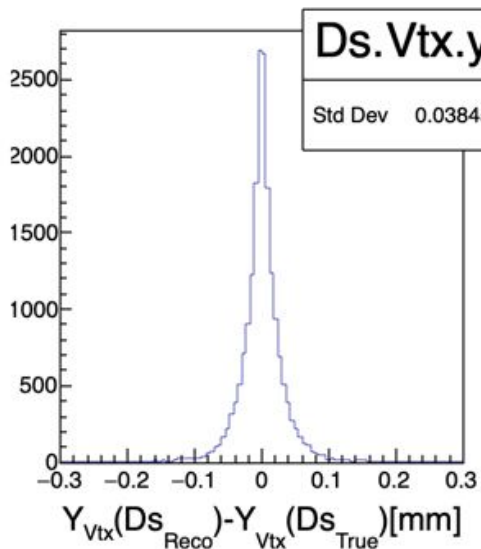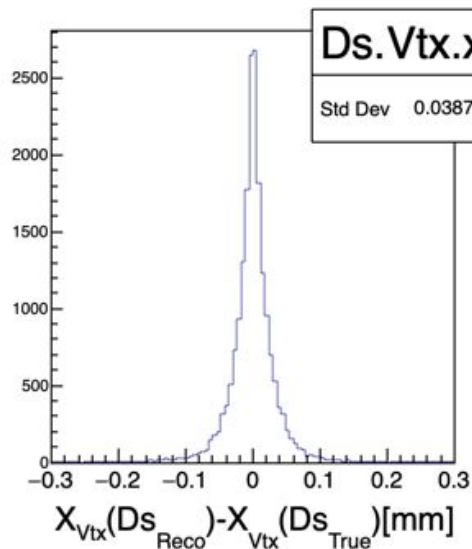
Vertex studies: next steps

- Include primary vertex reconstruction
  - Study the (signed) flight-length resolution
- What about the Bs vertex ?
  - To reconstruct it properly we need to create a Ds pseudo-track (neutral) and fit it together with the decay
- Define the more relevant benchmarks
  - Flight-length resolution for both Ds and Bs
  - Proper-time resolution for both Ds and Bs

Conclusions

- Getting familiar with the FCC analysis framework and the existing analysis code
- Now in a position to add more features and extend the existing studies
- Would be great to have a prioritized set of desired deliverables for June