Karlsruher Institut für Technologie

Difference in Kinematic Distributions in GCR August 2017 MC Sample and Data

Belle 2 Weekly Tracking Meeting

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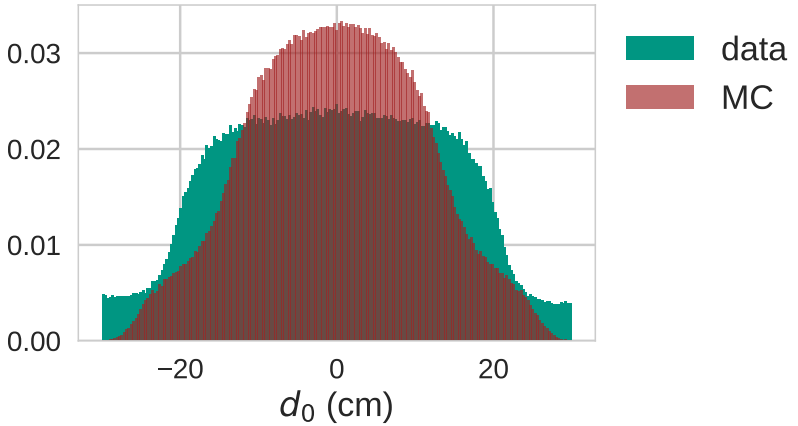
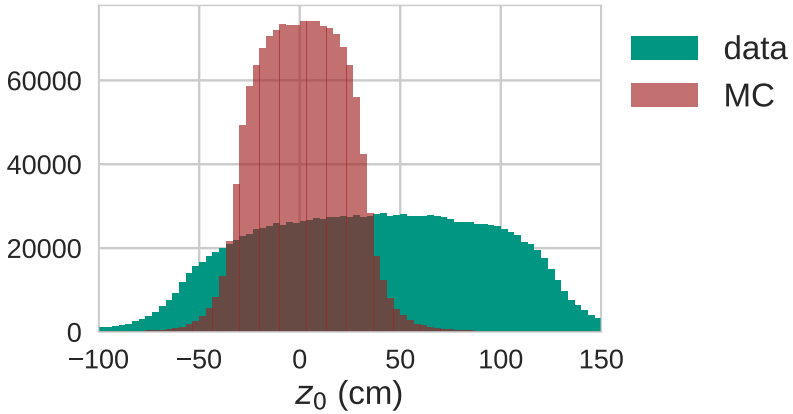
ETP - KIT

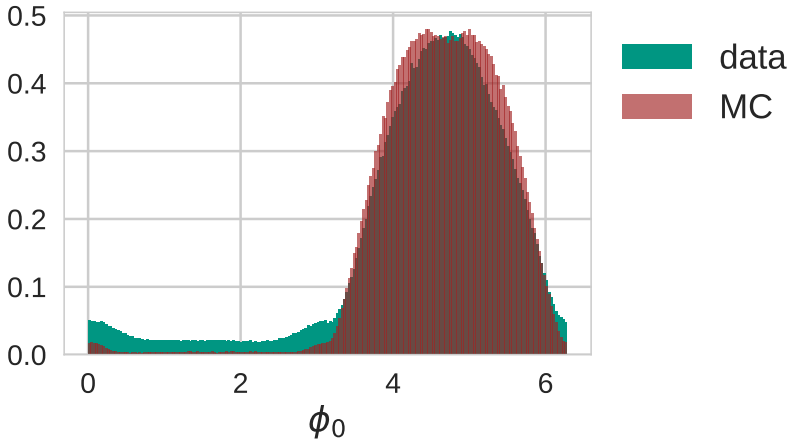
What I did

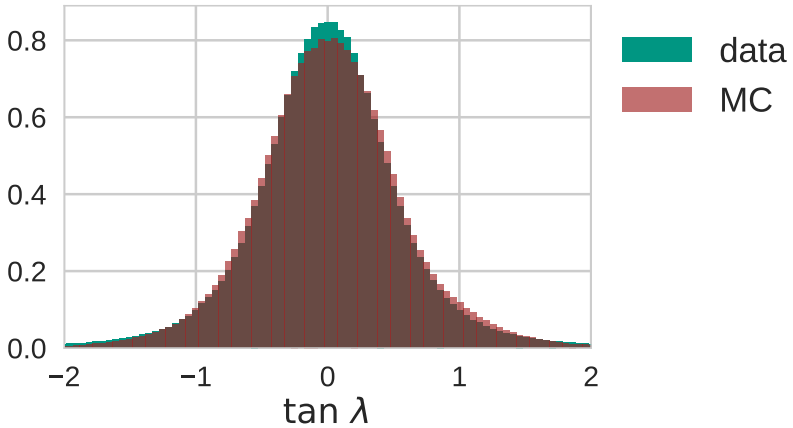
- at F2F tracking meeting I showed data from GCR Juli 2017 with back-to-back TSF trigger and used self-generated MC without trigger simulation
- recently MC samples with have trigger simulation became available for both GCR 2017 Juli and August runs
- I received August MC with single TSF simulation and data and plan to use it for my cosmic based tracking study
- did my own reconstruction because I look at the `NonMergedRecoTracks`,
- compared distribution of kinematic variables from the non-merged track fits in MC and data
- unexpected differences, in particular in z_0 and d_0.

My Track Parameter Distributions in MC and Data



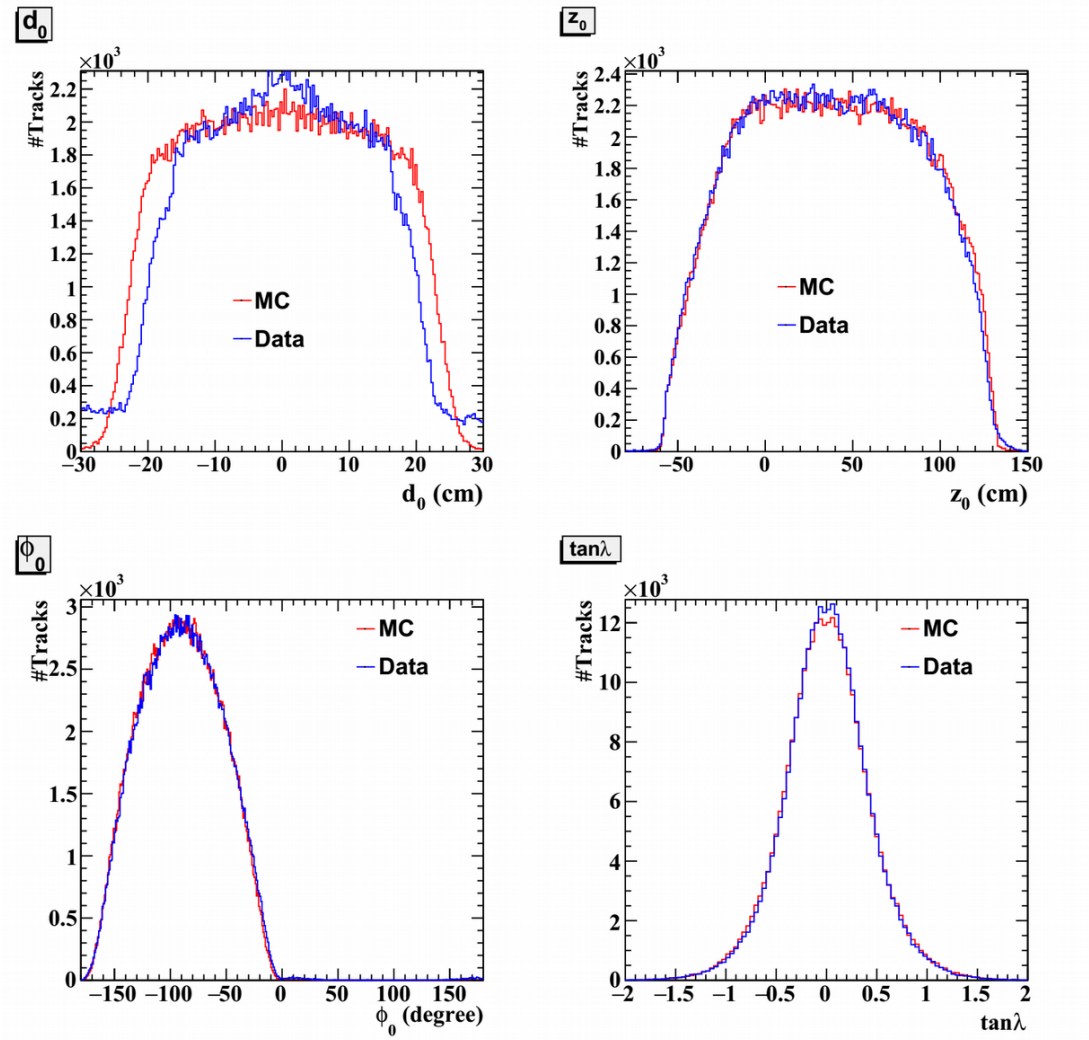






Distributions from GCR Run Coordinator Report from B2GM

Taken from talk by Shoji Uno at B2GM on 12 October 2017



Issues

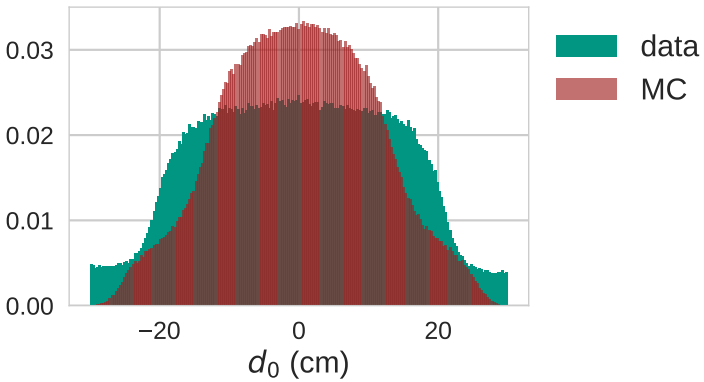
- My z_0 is much narrower on MC than on data. In the B2GM talk, the distribution looked narrower on data than what I reproduced, but wider in MC, all in all more similar.
- My d_0 MC distribution also looks different from data and from the B2GM talk
- Tail (?) in my tan λ distribution on data.
- My plots are from non-merged tracks, but I checked the distributions for the merged tracks, too, and they show the same issues.

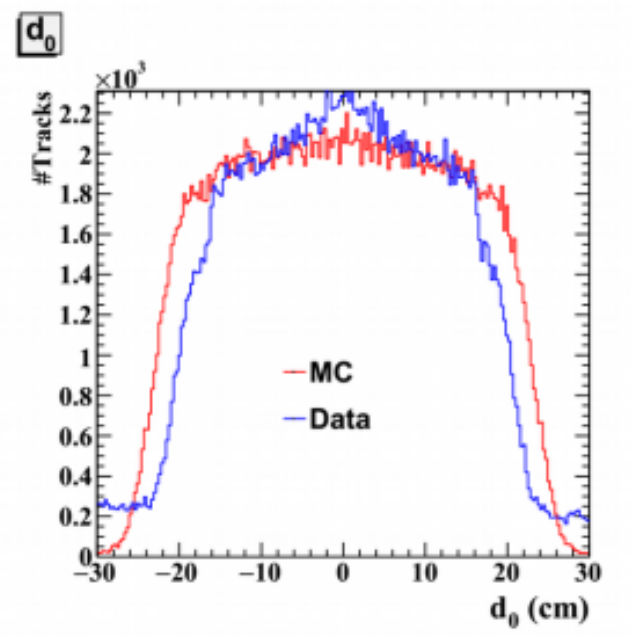
Questions

- What exactly is shown in the plots from the B2GM? How are the track parameters extracted?
- Is the MC from the B2GM plots different from mine? Where is it located?
- What was the accept box in the MC creation?
- Are there somewhere else plots with more data?
- Write an E-Mail to Karim / the DP group?

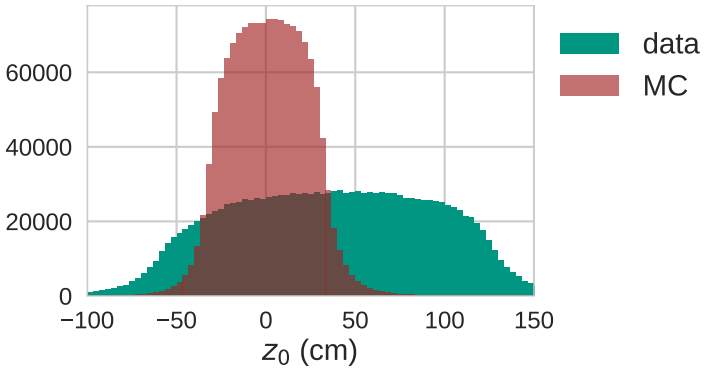
Backup

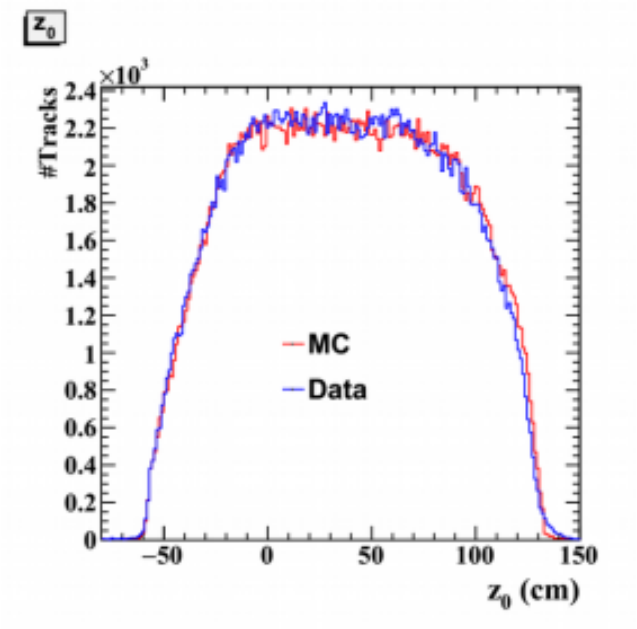
Side by side comparison I



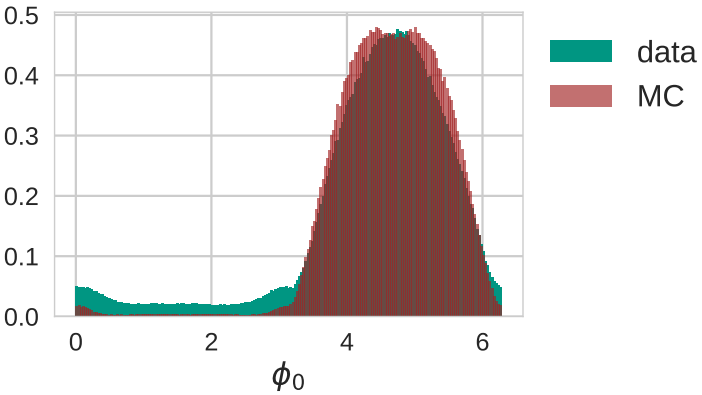


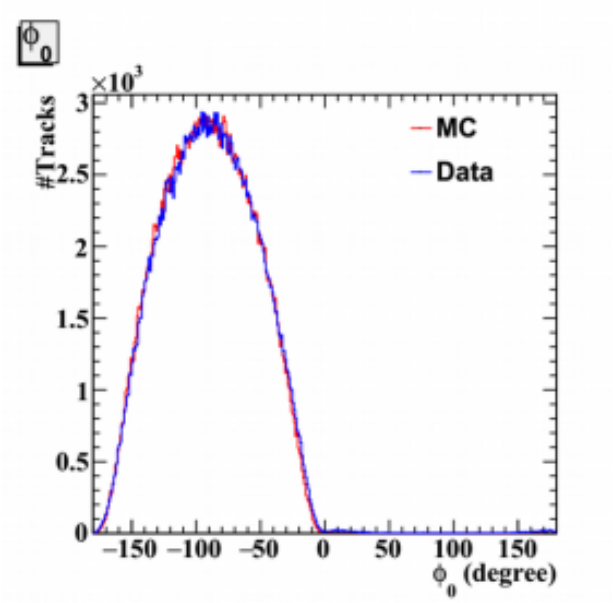
Side by side comparison II



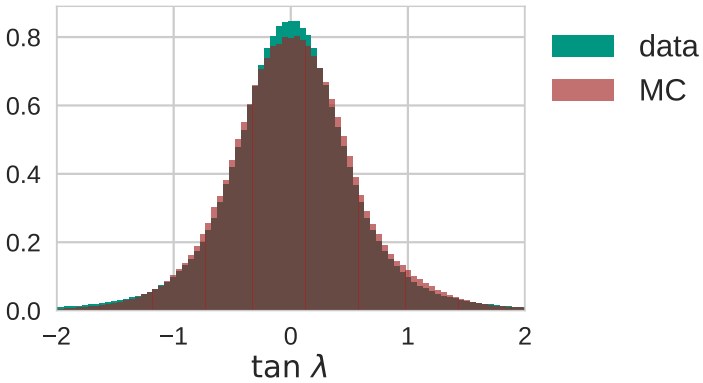


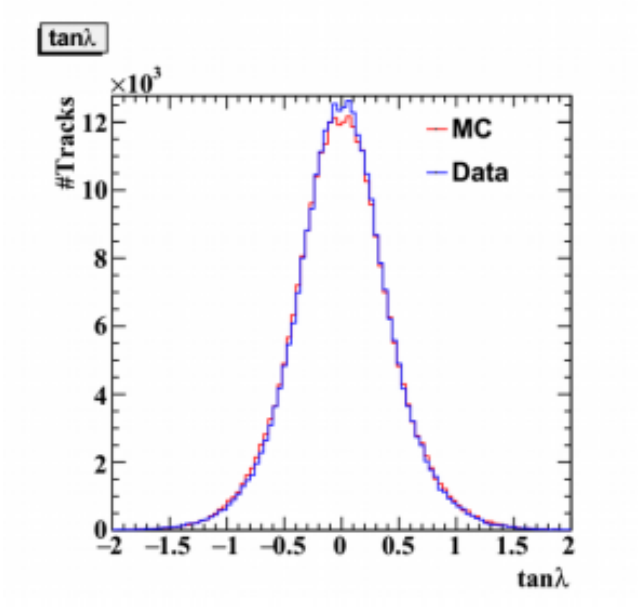
Side by side comparison III





Side by side comparison IV





p_T distribution