Karlsruher Institut für Technologie

weekly meeting 2018

PHASE 2 TRACKING SETUP WITH CKF

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I wish you all the best for 2018 and hope we will have a great start into the first data taking period!

NOTES

Event Samples without background

The only option you have to set is experiment number 1002

```
main.add_module('EventInfoSetter', expList=[1002])
```

But then you should use the Geometry from the database and the default Gearbox.

Event Samples with background

Well, there were some problems (see mails on tracking-ml), but fortunately Jake solved them. Still, I have to re-run my event simulation and reconstruction, so no results today.

I am always only using events, which have at least one SVD or PXD cluster.

SETUP

current	is the default tracking reconstruction with VXDTF2, CDC tracking, normal merger, PXD CKF.
ckf merger	is VXDTF2, CDC tracking, CKF merger, PXD CKF.
full ckf	is VXDTF2, CDC tracking, CKF merger, SVD CKF, PXD CKF.

The settings for the various CKFs are basically the ones for phase 3, except some cuts, which where softened.
Everything in blue is currently under discussion on a PR.

PRELIMINARY RESULTS

	current	ckf merger	full ckf
finding efficiency (prim)	0.8912	0.8903	0.8911
hit efficiency (prim)	0.8960	0.8980	0.9044
pxd hit efficiency (prim)	0.4991	0.5170	0.7064
pxd hit efficiency (has svd)	0.8590	0.8428	0.8279
pxd hit efficiency (has cdc)	0.4765	0.4966	0.7042
svd hit efficiency (prim)	0.5279	0.5555	0.8796
svd hit efficiency (has cdc)	0.4663	0.4994	0.8522
fake rate	0.0236	0.0352	0.0228
clone rate	0.0474	0.0423	0.0423
hit purity	0.9512	0.9510	0.9509
pxd hit purity	0.9929	0.9942	0.9947
svd hit purity	0.9759	0.9748	0.9596

COSMICS FOR PHASE 2

I see two possibilities for Cosmics tracking with/without magnetic field:

1. CDC CR tracking without merging, CKF and KLM/ECL hit addition, fitting, merging, fitting.
2. CDC CR tracking with merging, CKF and KLM/ECL hit addition, fitting.

Additional things:

- Tadeáš and Jakub discovered the problem, that our Cosmic tracks without background have ”only” a momentum of approx. 1 GeV, which leads to problems with fitting them (too high energy loss).
- Are there somewhere background files without beam induced background? Or is this automatically simulated?

NEXT STEPS

- Discuss/Merge the open PR on the changes discussed in Pisa. For this, I will meet next week with Sasha and Miriam.
- Generalize the phase 2 studies also on background samples and create a pull request on the changes needed for this (probably only configuration).
- Run tests for Cosmics (already started together with Jakub and Tadeas), probably some code work needed.