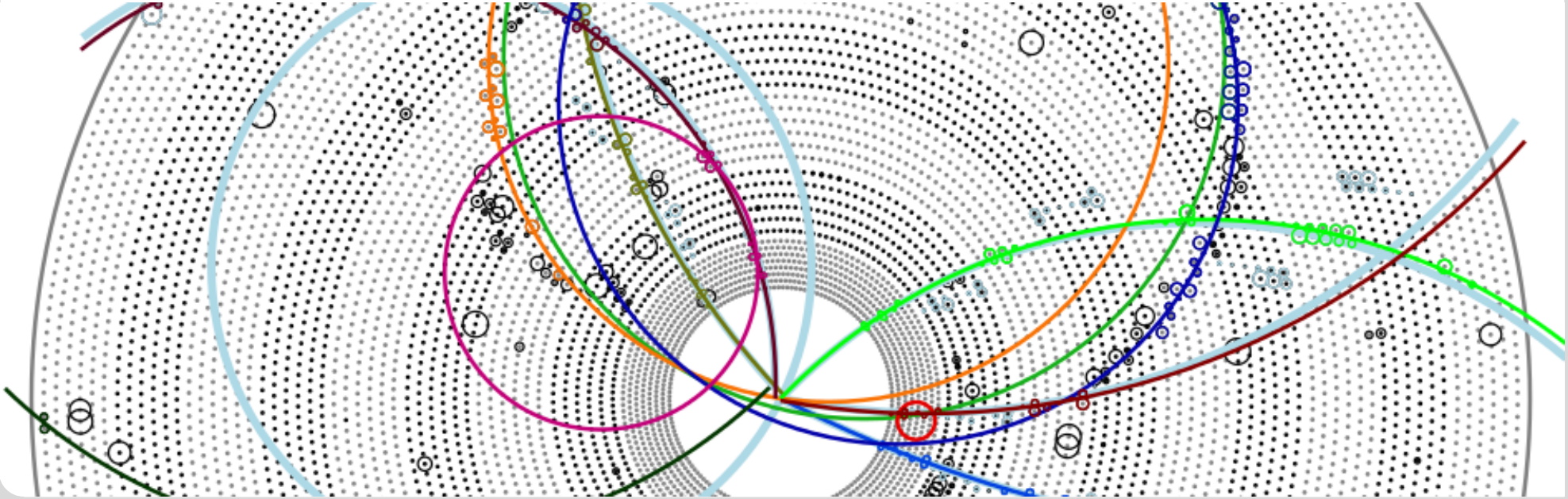
Karlsruher Institut für Technologie

CDC Tracking

F2F tracking meeting.

Nils Braun | 1.9.2015



Updates...

Small Updates

- Small changes in the `StereoHitFinder` with a `QuadTree` ($r \rightarrow s_{\perp}$).
- `SegmentTrackCombiner` is totally reworked to use configurable BDT filters.
- Simon (new Bachelor student) is working on improving all filters in CDC tracking.

..results..

On 5000 generic events (primaries + secondaries) with background simulation:

	Trasan	Full Path
Finding Efficiency	85.53 % (91.49 %)	85.74 % (91.50 %)
Hit Efficiency	81.93 % (87.25 %)	85.46 % (90.51 %)
Fake Rate	15.95 %	16.40 %
Clone Rate	19.50 % (17.17 %)	11.49 % (4.38 %)
Executing Time	$\approx$ 450 ms / Event	$\approx$ 90 ms / Event

We are ready to go!

.. and problems

After the track finding comes the track fitting. For physic analysis only the fitted tracks can be used. After cutting away all non-fitted tracks (on primaries):

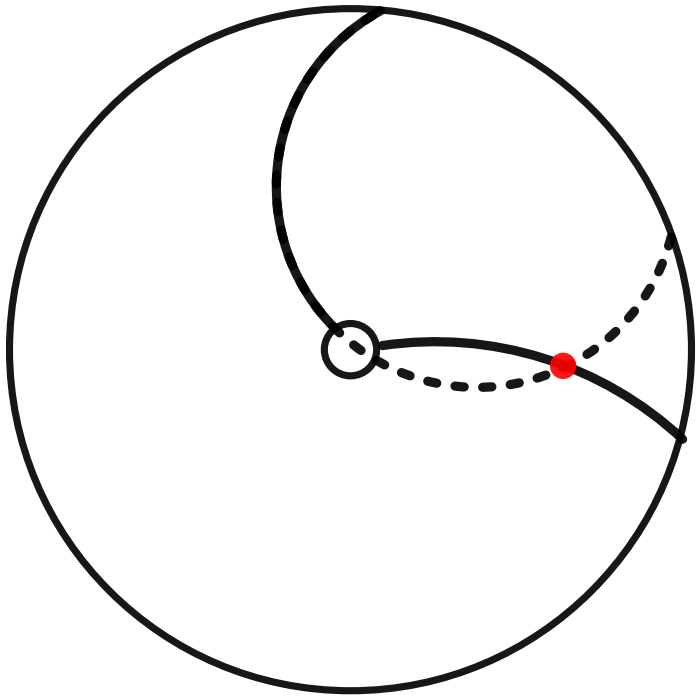
	Trasan	Full Path
Finding Efficiency	86.88 %	79.15 %
Hit Efficiency	86.33 %	89.36 %
Fitting time	$\approx$ 200 ms / Event	$\approx$ 1000 ms / Event

What happened?

Fitting problems

By looking on some event displays it seems that:

- Genfit has problems with tracks with large holes (hits in one superlayer are missing)
- The problem is more or less only fitting the curlers
- Another problem is with low-pt-tracks that are axial only.
- We have some problems with catching hits from the other side of the event



Possible Solutions

- I have written a `TrackQualityAsserter` which could increase the finding efficiency to 83.52 %. We can do more here.
- One should optimize the various finding steps not on finding efficiency, but on finding efficiency after the fit.
- The fitting procedure should be more stable to cope with missing layers (or we should find those layers).
- Make a VXD-CDC combination before fitting?
- ???