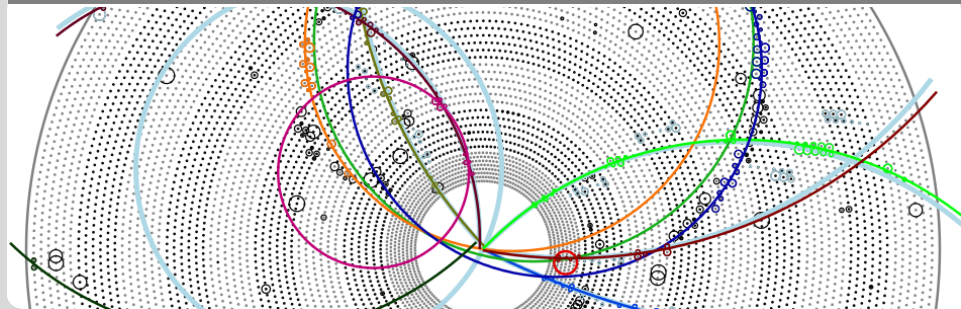


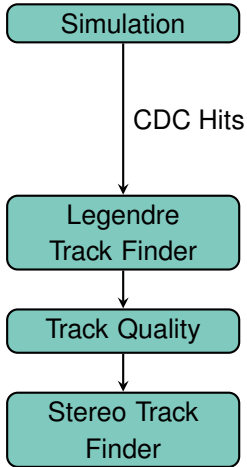
Quality improvements for the Legendre TF and combiner

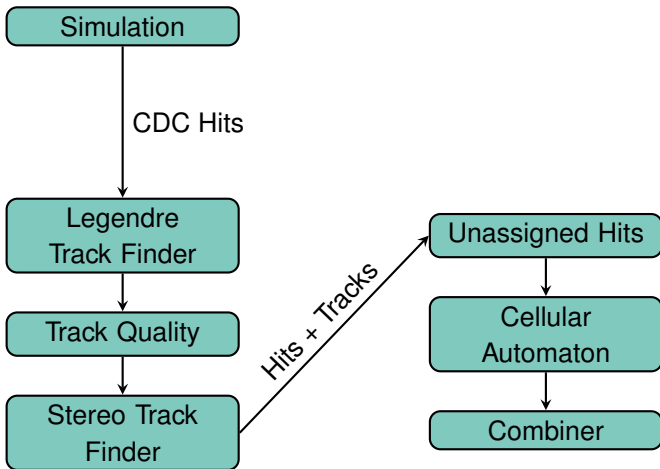
Biweekly tracking meeting.

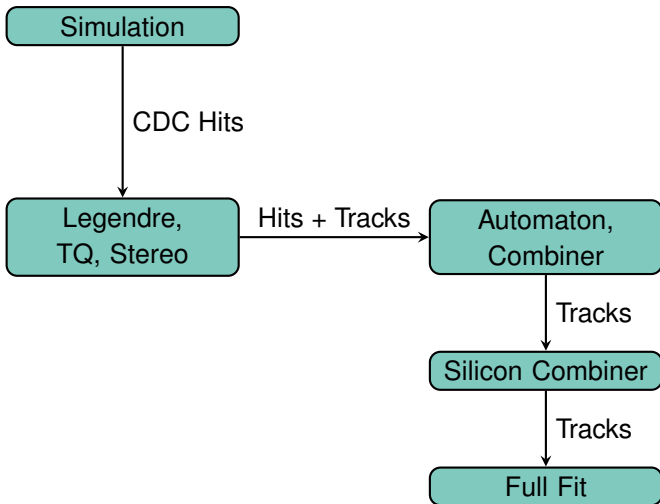
Nils Braun | 6.3.2015

KIT









Track quality after the Legendre TF

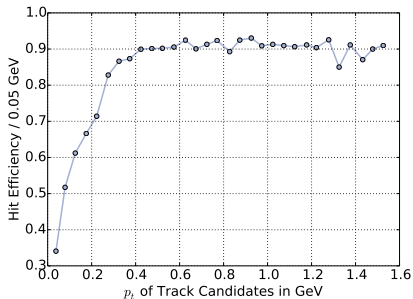
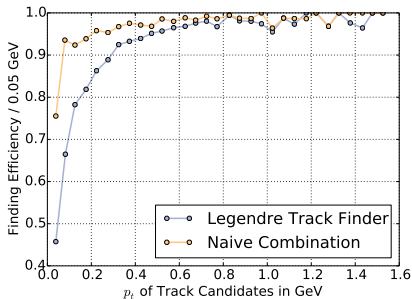
“Simple” algorithms implemented and refactored:

- Deletion hits from a track with calculating a certain “index” (as a function of the distance between track and hit). Something like χ^2 .
- Reassignment of hits between already found tracks.
- Merging of tracks with a simple circle fit. Cleanup of “bad” hits.

Improvements on fake- and clone-rate:

	Without any postprocessing	With postprocessing
Fake-Rate	15.44 %	13.62 %
Clone-Rate	23.52 %	7.02 %
Efficiency	86.94 %	83.82 %
Hit Efficiency	74.29 %	80.40 %

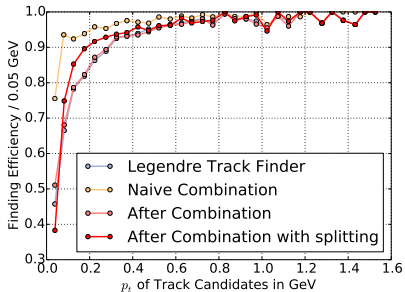
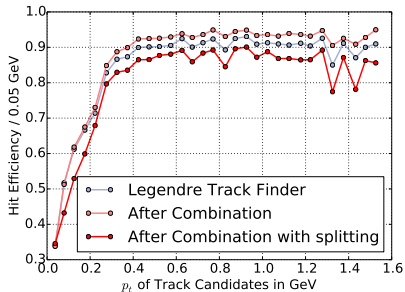
- Huge refactoring of LegendreTrackFinder module and the corresponding code basis.
- Clean up, deletion of unused/reworked methods and classes → better readability, smaller compilation time.
- Common code basis between legendre and local track finder can be included.
- Improvements on the previous postprocessing, more easily accessible parameters. Fixed a memory leak.



- Finding-/Hit-Efficiency should be increased - especially for low-momentum tracks.
- Naive combination = legendre track finder + local track finder on unassigned hits without merging.

- Splitting of legendre tracks.
- Comparison and validation of track parameters for the segments.
Deletion of background segments.
- For axial segments:
 - Common circle fit.
- For stereo segments:
 - Common sz fit.
 - For more than one possibility: looking for common track parameters (slope, distance to IP).

	Legendre	Legendre + Lokal	Trasan
Fake Rate	13.62 %	7.12 %	9.57 %
Clone Rate	7.02 %	10.29 %	20.10 %
Efficiency	83.82 %	86.97 %	85.95 %
Hit Efficiency	80.40 %	77.98 %	84.88 %



	Legendre	Combiner	Combiner with Splitter
Efficiency	83.82 %	84.28 %	86.97 %
Fake Rate	13.62 %	12.65 %	7.12 %
Clone Rate	7.02 %	7.55 %	10.29 %
Hit Efficiency	80.40 %	82.15 %	77.98 %

Quality improvements for the Legendre TF and combiner

- Improvements on postprocessing after the legendre track finder.
- First implementation for combination of the tracks from the legendre and the local track finder.
- Better handling of unassigned segments after the combiner needed.