MC match Loopers Releases

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SuperB General meeting
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MC match

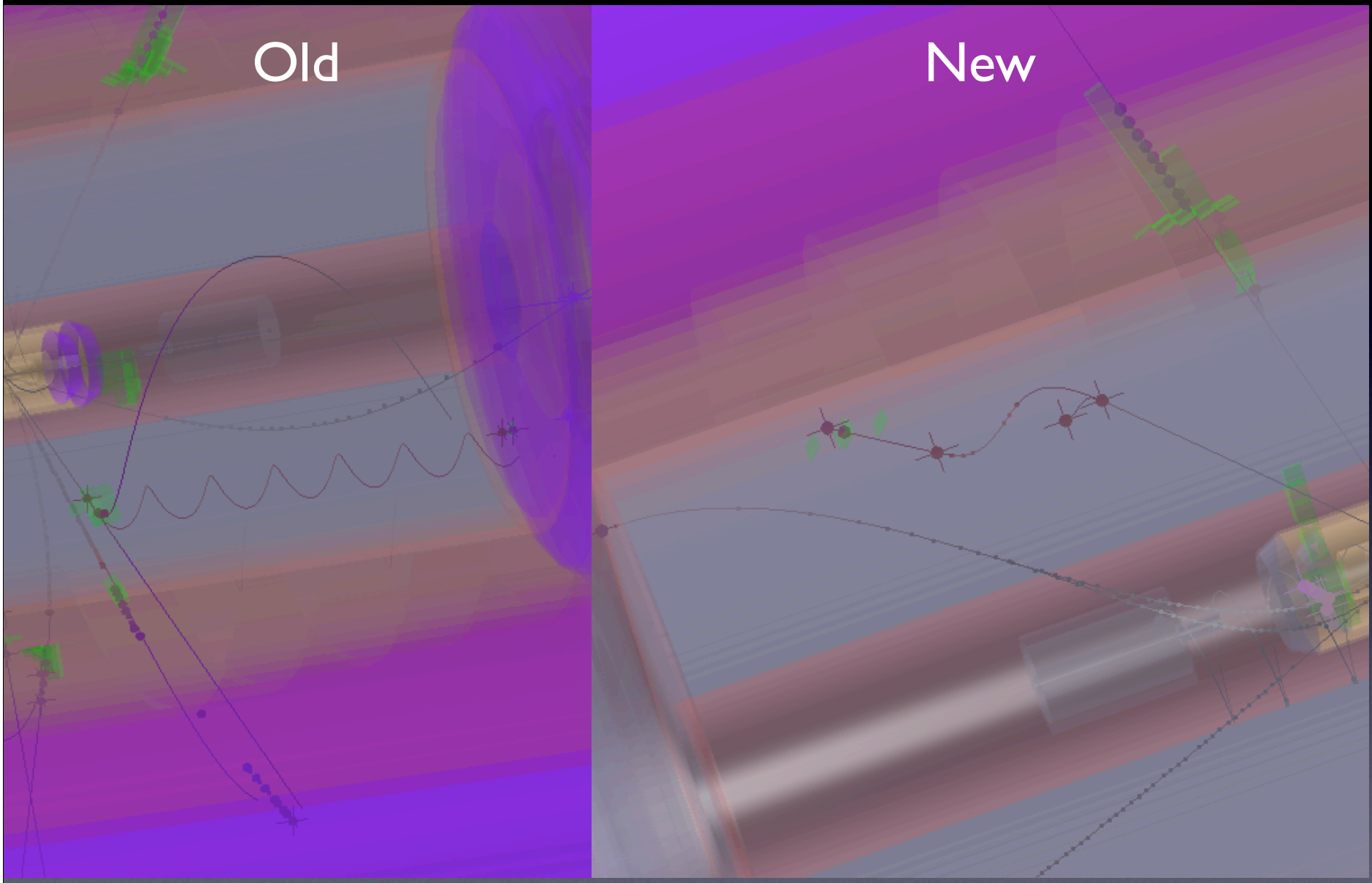
- Algorithm inherited from BaBar
- Chisq match ('Default') based on similarity of 4-vectors
  - doesn't handle ambiguous situations (overlaps)
  - misses 'splitoffs' and hard scattering
- 'GHit' match
  - Track match weight = fraction of hits from GTrack
  - Cluster match weight = energy fraction from GTrack
  - Computed at 'reco' stage (TrkRecoTrk, PacCluster)
    - copied to Beta map

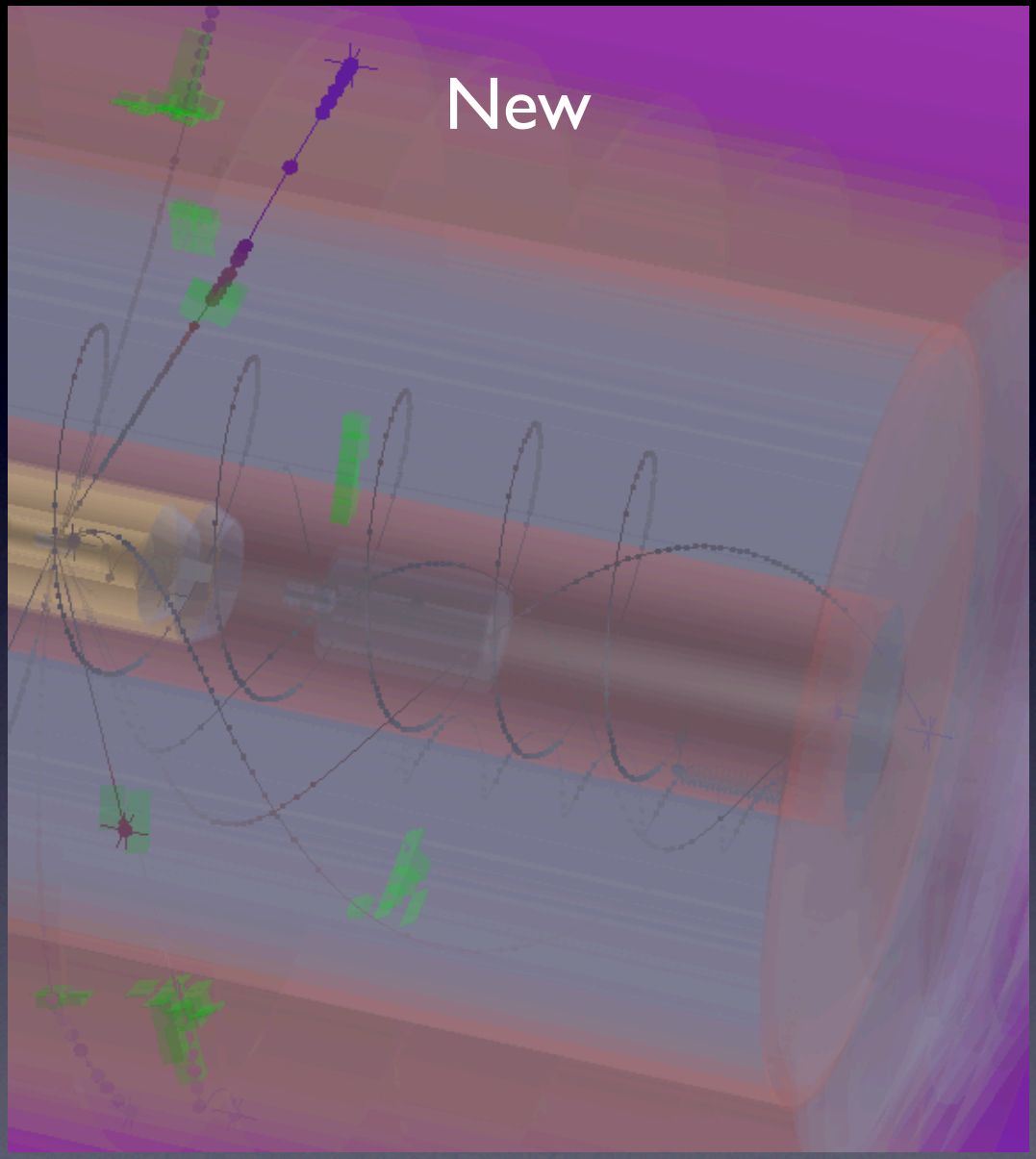
‘GHit’ match in FastSim

- ‘GHit’ match computed for tracks since V0.0.1
  - weight = 1 without hit merging/pat. rec.
- ‘GHit’ match now computed for clusters
- ‘GHit’ match enabled by default in PacMC

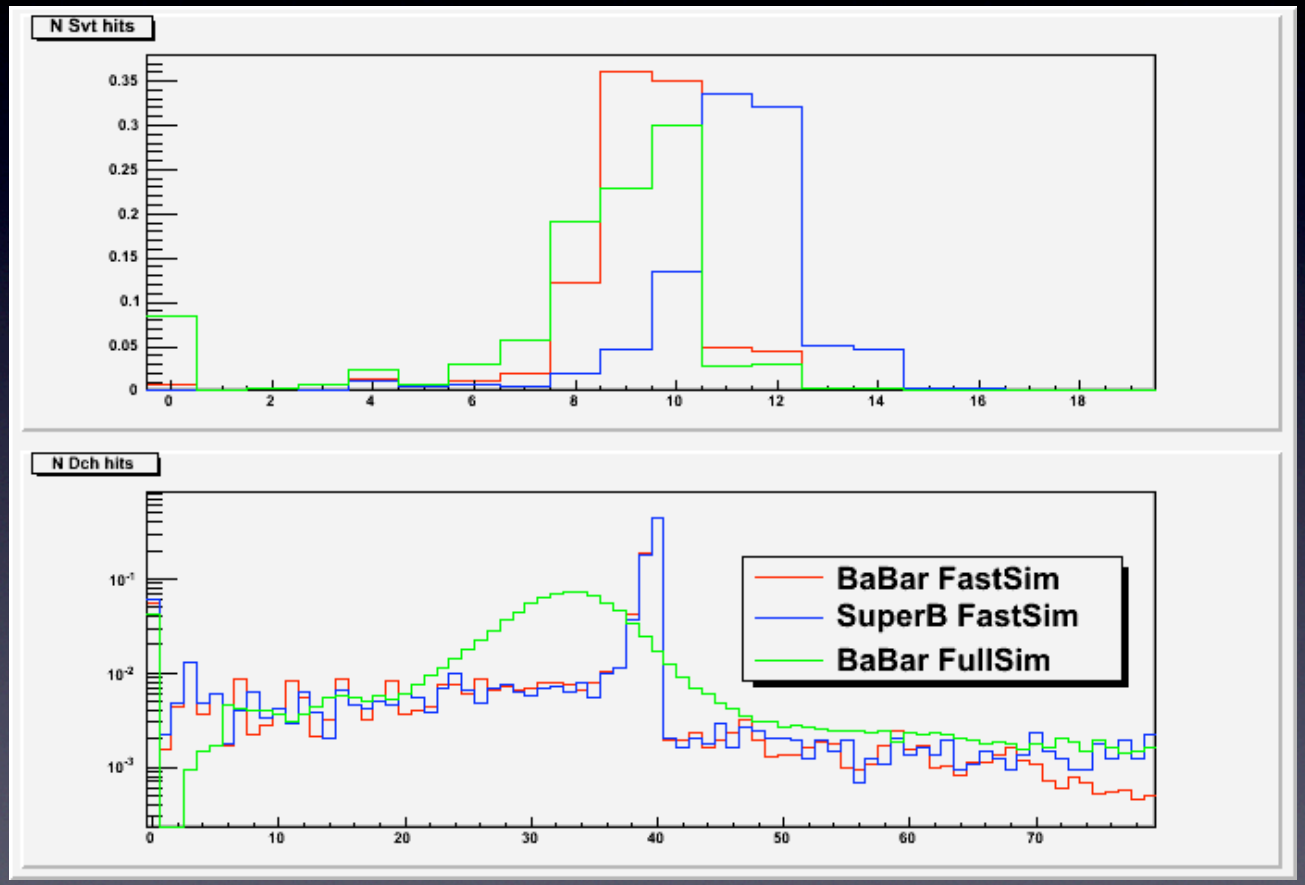
Loopers

- PacSimulate could not find cylinder intersections after apogee of helix
  - No tracking hits on looper branches
  - Allowed unphysical endcap intersections
- Now inwards helix-cylinder intersections are found
  - Up to 10 loops (configurable)
  - Most loopers stop due to energy loss/interaction

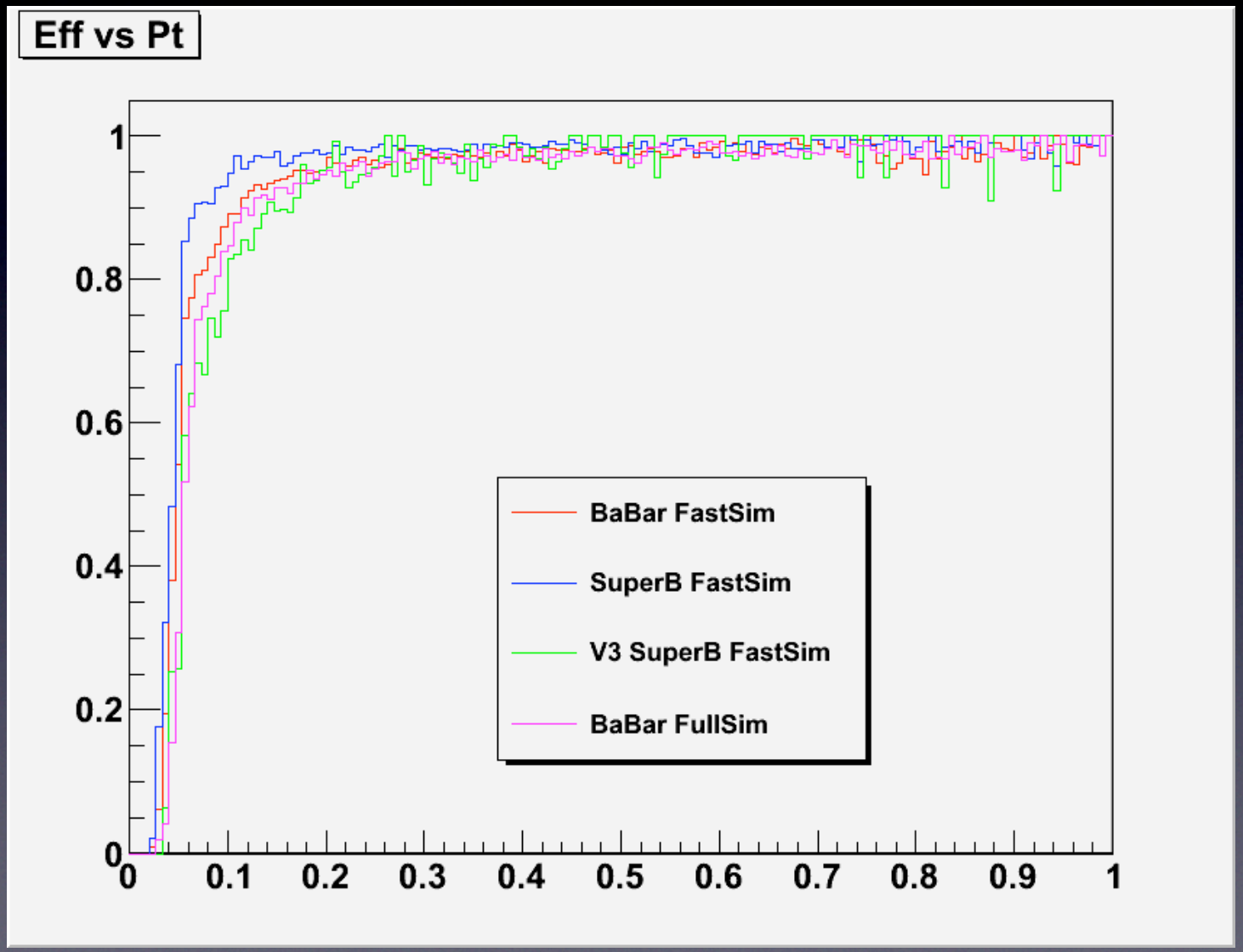

Old
New


New

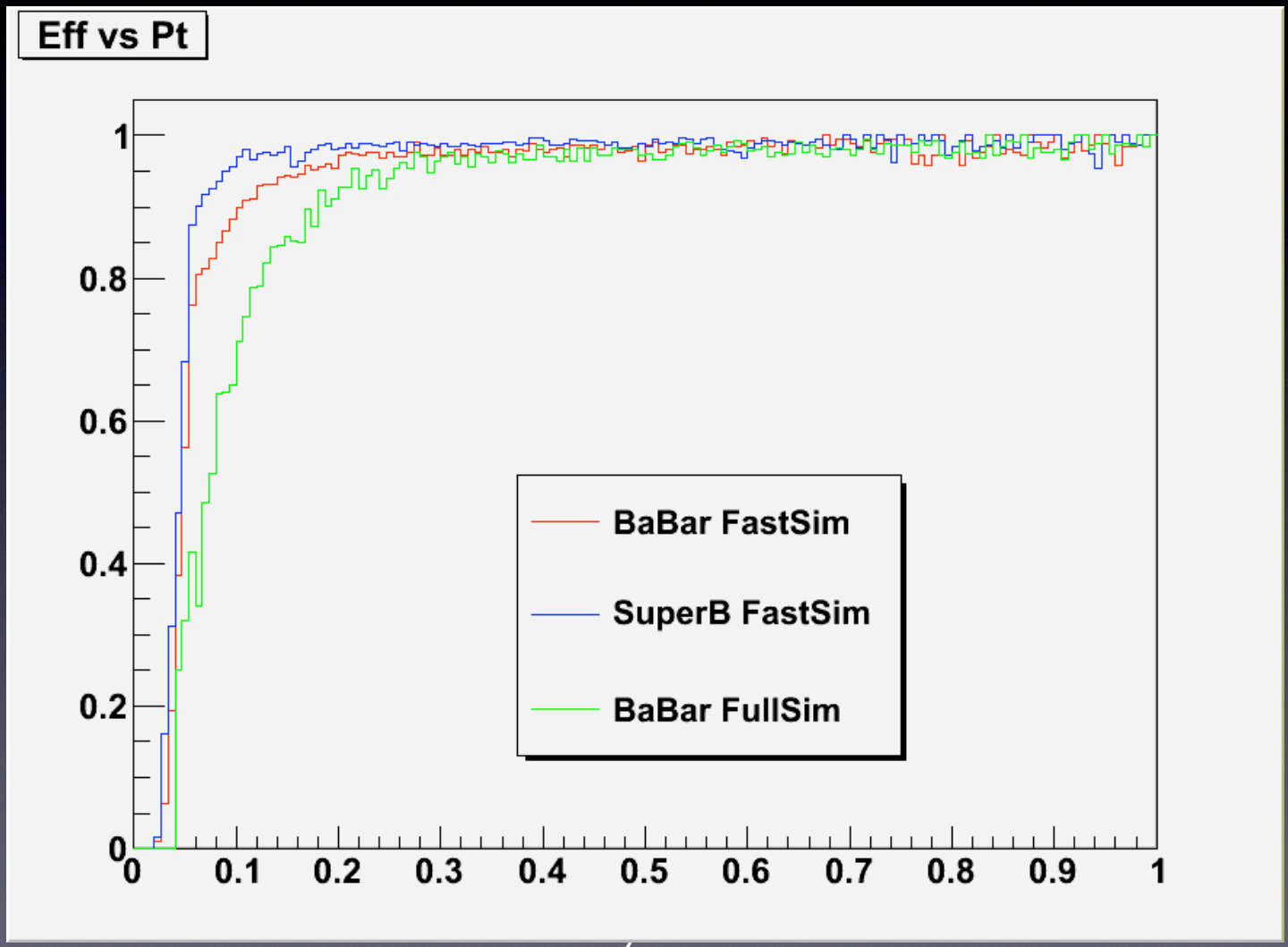
Looper effect on tracking



Primary pions (from generator) central ($|\cos\theta| < 0.8$)

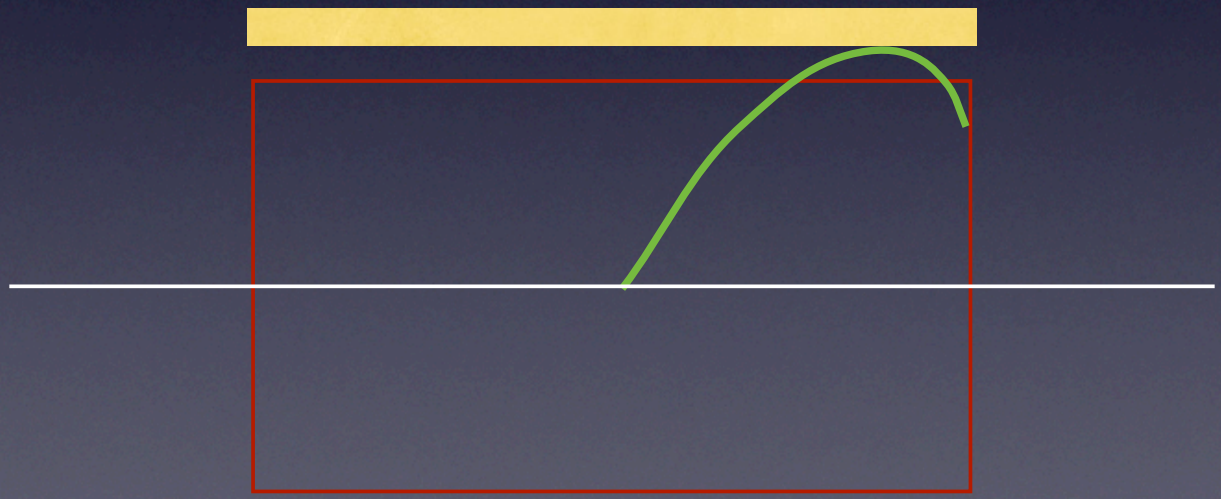


Primary pions (from generator) central ($|\cos\theta| < 0.8$) No decays



Outstanding Issues

- Order of plane/cylinder elements matters
  - affects intersections near barrel-endcap transition
  - 2 solutions
    - exhaustive search for closest element
    - geometric volumes



Releases

- Update to V0.1.0 planed soon
  - Fix script, make issues
  - Will be released as an update to the RPM
- ReleaseFiles/Patches (in V0.1.0)
  - brings in most recent (untagged) modifications
- Release V0.1.1 for generic production tests
  - hit merging
  - background merging
  - physics packages
  - mid July?