

RICH Status

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- **Improvements to Track Selection Criteria**

- **Following recommendations from tracking group**

- Use loose cuts “Likelihood”, “GhostProbability” and “CloneDist” in addition to track Chi^2
- Replace old cuts on “MatchTrackChi2” and “TsaLikelihood”
- New software monitors to study track selection efficiencies as a function of these variables.

- **(Non-RICH : Ultimately, will use experience to improve track selection used during ProtoParticle creation at end of Brunel.**

- Discussion with Physics groups on how to deal with “unusual” tracks in DaVinci.

- **Now using ‘Markov Chain’ Ring finding algorithm (NIMA 560 (2006) 621)**
- **New Ring reconstruction based on “Ring templates” (S.Easo)**
 - **Uses fourier transforms (from FFTW3 library, available in LCG area)**
 - **Finds the rings made by track segments from each of the three radiators.**
 - **Used recently, in selecting Cherenkov rings for RICH Alignment.**
 - **Studies underway to assess its usefulness in RICH refractive index calibration.**
 - **LHCb note on this method in preparation.**
- **New trackless ring finder based on “Elastic Neural Networks” (C.Jones)**
 - **Finds Cherenkov rings in both RICH1 and RICH2**
 - **Main advantage over previous algorithms is speed - ~ Factor 200 times faster (O(2ms) / event in total).**
 - **Can be run offline by default**
 - **Introduced (quickly) in Brunel v35r1 to test in last FEST week**
 - **More details at a future TREC**

- **RICH has $O(500)$ HPDs**
 - **Each HPD has an associated DeRichHPD object that handles various calibration and alignment issues.**
 - **Initialization of these elements is slow**
 - Olivier Callot identified a solution that involves reorganising our XML files
 - Work under way to implement this and test with all applications
- **Other optimisations of course will be considered as needed**

- **Detailed MC09 PID talk on thursday**
 - **Compare DC06 to latest MC09 data**
 - **First look at higher luminosity $v = 2,3,4$ data**
- **Please come back Thursday !**
 - **I promise I'll be there this time ...**