ALERT meeting - Kalman Filter updates

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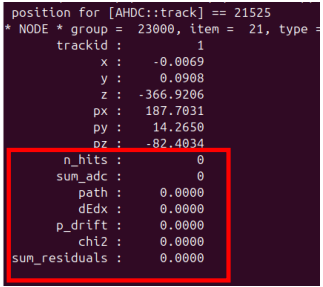
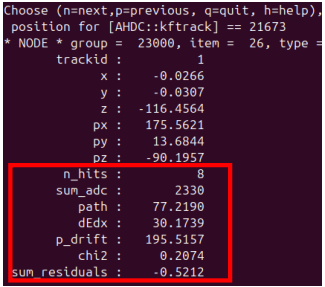
Updates

- The new AHDC geometry is available in **coatjava** and **gemc**
  - **coatjava** since the release **13.6.0**
  - **gemc** in dev version only
- I moved the **Kalman Filter** in **ALERTEngine**
  - Require **AHDCEngine** to have been run before
  - Remove redundant attributes in the object **Track** (everything with the _**kf** extension)
  - Update the bank **AHDC::hits** in the ALERTEngine
  - Define the **number of iterations** and the **PID** as variable in the Kalman Filter
  - A pull request has been submitted

Updates

- For now, moving the Kalman Filter in ALERTEngine has no effect on the result but:
  - the new implementation allows us to use it several times
  - example: **KF 1** $\rightarrow$ **clean bad hits** $\rightarrow$ **KF 2**
- Also, it was a mistake at the beginning, but now these quantities can be filled independently (the values for the Helix fitter are empty.)





Next steps

1. Make a routine to eventually clean bad hits after a first use of the Kalman Filter
2. Include the ATOF hit in the Kalman Filter
   - It was one of interest of moving the KF in ALERTEngine
   - For now, the AHDC-ATOF matching is only done with **wegdes**. We ideally would like to use **ATOF bars**
3. Check that the PID is correctly used by the Kalman Filter (RungeKutta and energy lost)

Reconstruction status

- Run 22712 on D2 target, 2.23951 GeV beam energy
- Elastic cuts: 3.4 GeV$^2 < W^2 < 3.9$ GeV^2 and $\Delta\phi < 45°$
- Deposited energy dEdx versus momentum p of the track (after the Kalman filter)