ALERT meeting - Kalman Filter updates

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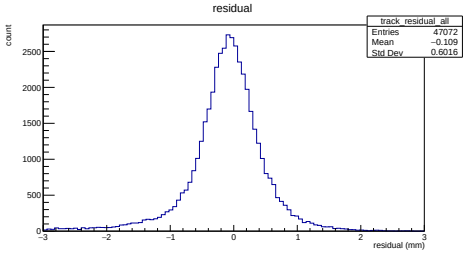
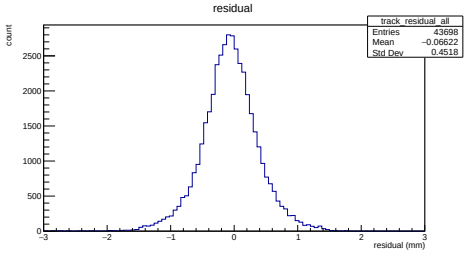
February 16, 2026

Updates

- Cleaning of bad hits
  - Made the Kalman Filter reusable (e.g the error matrixes are saved from one use to another)
  - Feature: we run KF once, then we remove all hits with $|\textbf{residual}| > \mathbf{1.5\ mm}$, and finally we rerun the KF with 15 iterations
  - The standard deviation is better



(a) before



(b) after

Ongoing work - ATOF hits

- Include the ATOF hit in the Kalman Filter
  - Use **ALERT::ai:projections** {`trakid, matched_atof_hit_id`}
  - nb of matched wegdes / nb of tracks $= \mathbf{20.94}\%$
    - $\rightarrow$ nb bars with the same layer id $= \mathbf{10}\%$
    - $\rightarrow$ nb bars with the same layer id or $\pm 1 = \mathbf{20.53}\%$
- I already have a first implementation in coatjava
  - But, I still need reasonable estimations of the resolution in z, r, ϕ
  - Any clue?
  - $\delta r^2 \rightarrow$ (9 mm^2), $\delta \phi^2 \rightarrow$ (9 deg^2), $\delta z^2 \rightarrow$?

Reconstruction status

- dEdx verus p, run 22712 on D2
- Elastic cuts: 3.5 GeV$^2 < W^2 < 3.8$ GeV^2, $|\Delta\phi| < 20°$, nhits ≥ 6
- Hit cleaning included (work on the ATOF hit not included)