HFT geometry in Run-13

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- Review goals
- The possible configuration(s)
  - Beyond engineering
  - Realistic goals; physics and not
- What is this geometry for?
- Next stop – Y2014 – Full HFT

Review goals

- A realistic Y2013 geometry for the PXL prototype
  - Make sure mass distribution is realistic both at midrapidity and upstream (East)
    - Impacts both PXL simulations/efficiencies and rest of STAR
    - Your input/checks/comments are important
  - Make sure model is useful in tracking etc.
  - Make sure results make sense

- Have an action plan for a geometry pre-release within a month
  - Full geometry release can only happen when hardware is actually build/finalized
    - Cu instead of Al cables, # of sectors, actual thicknesses
  - Exact placement of sectors depends on TPC-sectors state
  - Geometry versions might be needed if re-configuration of sectors is deemed necessary due to physics goals

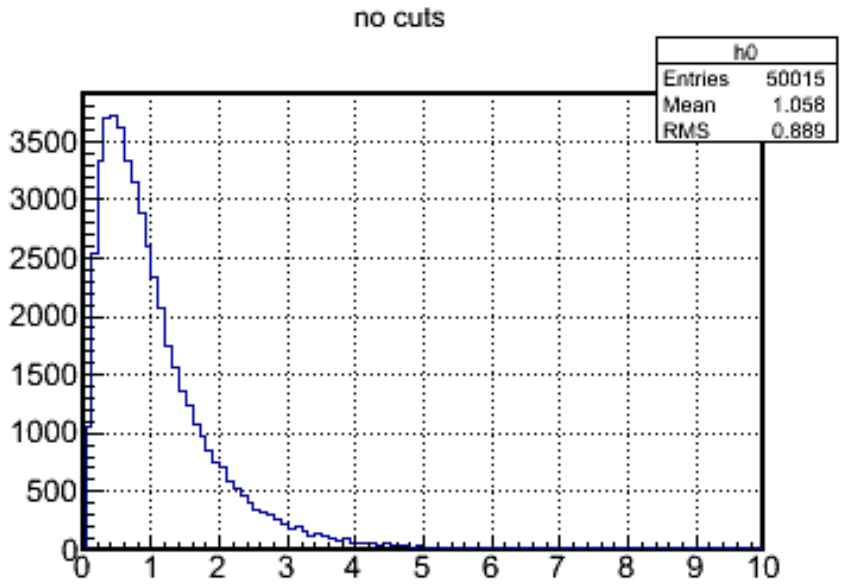
- Verify that all elements needed for successful simulations (next slides) are present

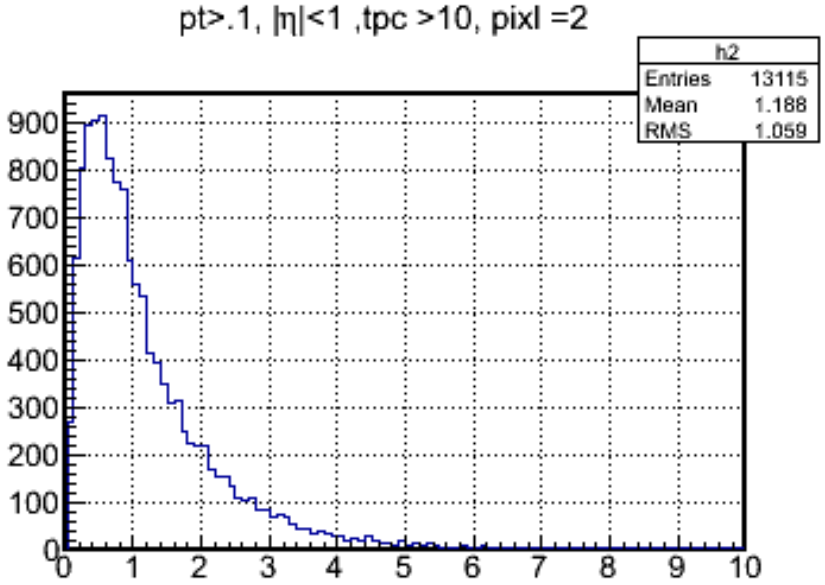
Engineering-run goals…beyond engineering

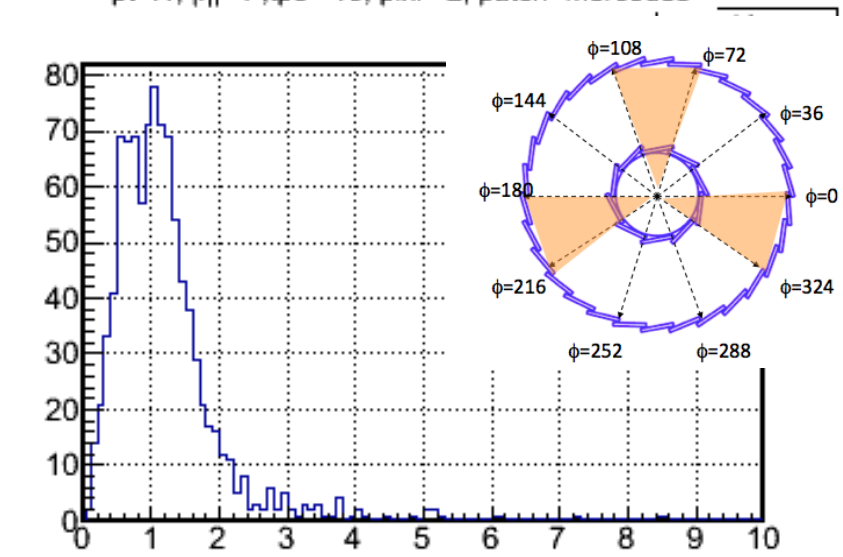
- A prioritized (in terms of realistically achievable) list of goals is:
  - Prove Hit/Track (or tracklet) finding with PXL info only
    - Assumes reasonable background environment
  - See if accidentals level is manageable
  - Prove some Event vertex capabilities with PXL only
  - Prove some TPC+PXL tracking capabilities (even with excessive ghosting)
  - Run Calibration codes

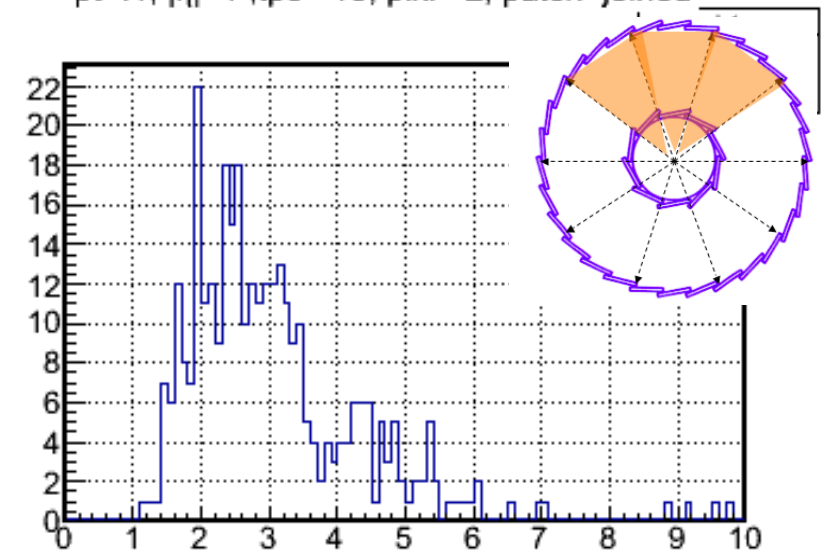
- IF the above are indeed the case*:
  - Run in Mercedes (low_pt) configuration for D0 x-section measurement
  - Run in Join (high_pt) configuration for D0 R_{CP} at intermediate pt
    - And why not give v2 a shot !?

* Assuming a multi-week Au-beam run





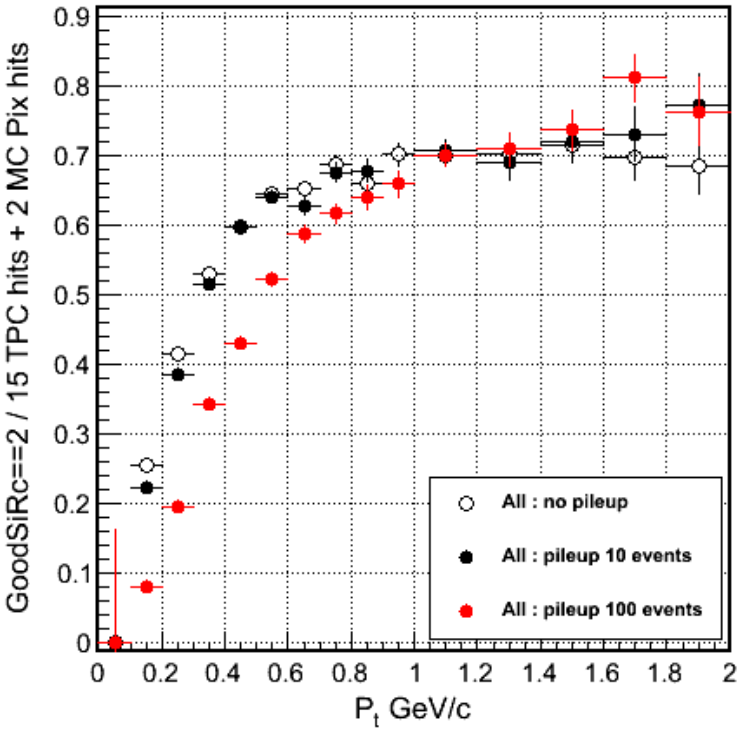


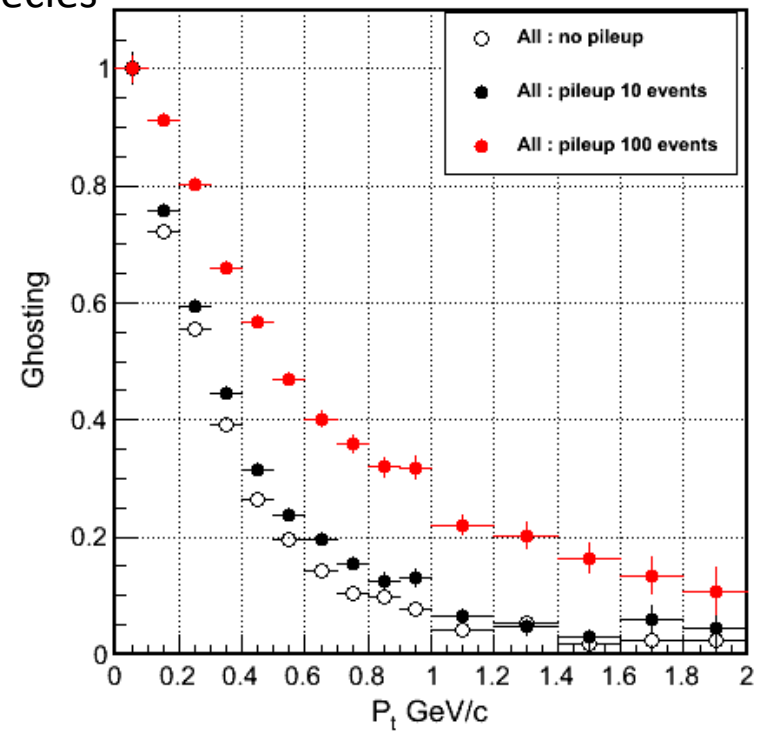


acceptance D0

Single track efficiency and ghosting

All species





* Assuming everything else is ideal

What is this geometry for?

- A realistic Y2013 geometry for the PXL prototype can be used
  - As a basis for Y2014 (full HFT) geometry
  - To perform realistic simulations for performance in general
  - Exercise geometry (alignment) codes
    - VMC environment is preferred
  - At some point put it in track embedding chain for physics efficiency calculations

- Next stop – Y2014/Run-14
  - SSD/IST come in
  - System becomes more complex
  - Partial remodeling of the SSD, from scratch modeling of IST
  - + services
  - We plan a draft in a couple of moths