PID Request from PWG

Matching Needs (physics) to Performance (detector)

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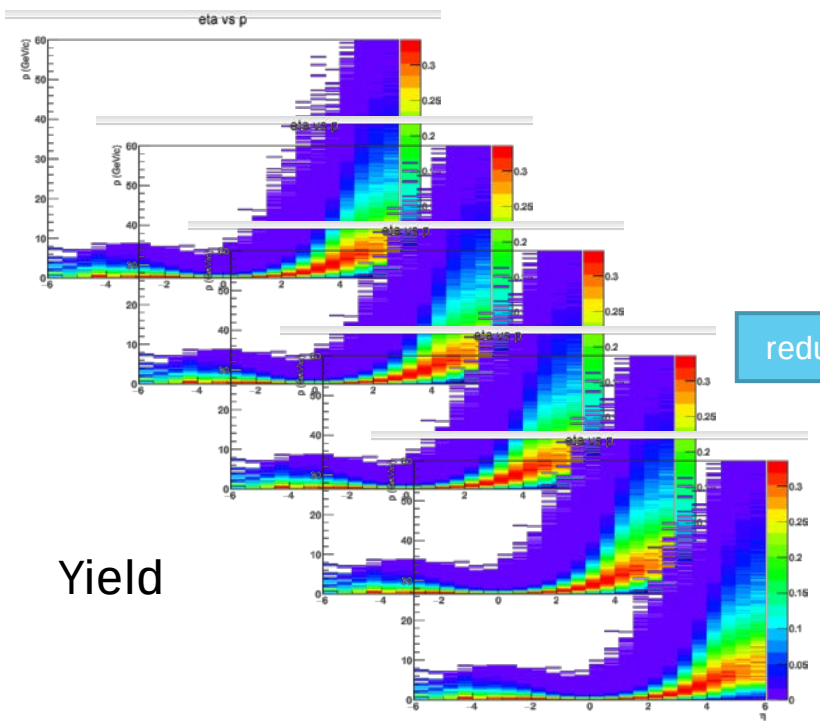
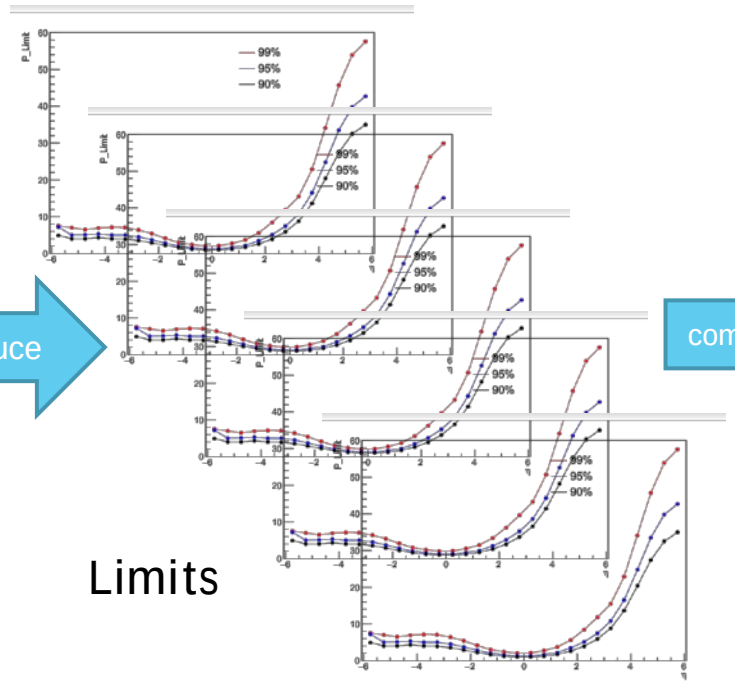
Imagined Workflow



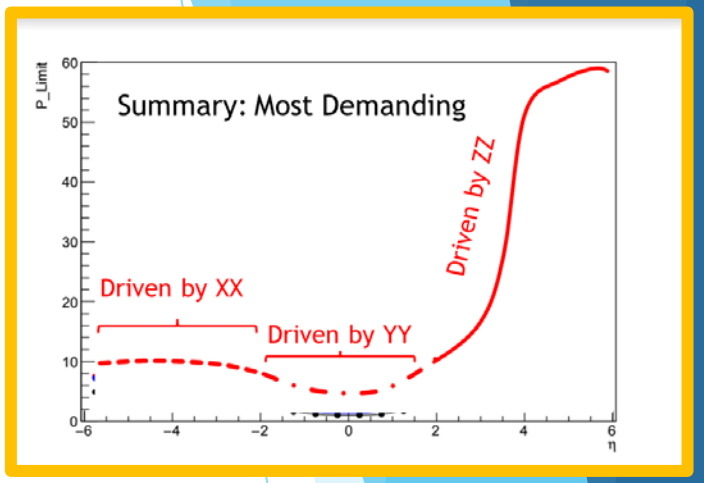
Yield

reduce

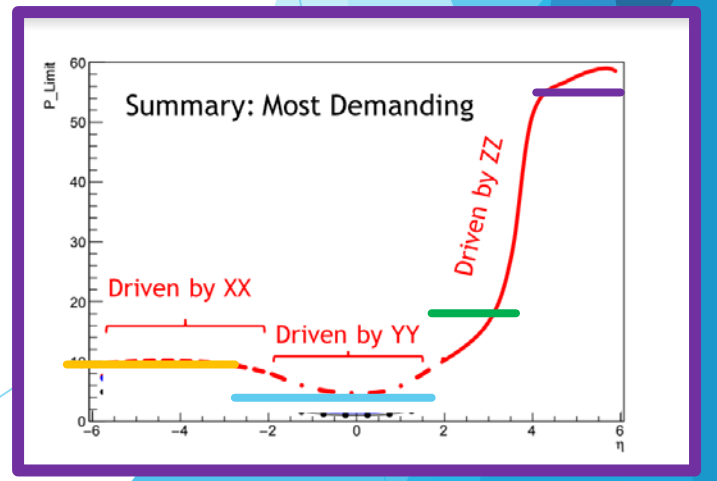


Limits

combine

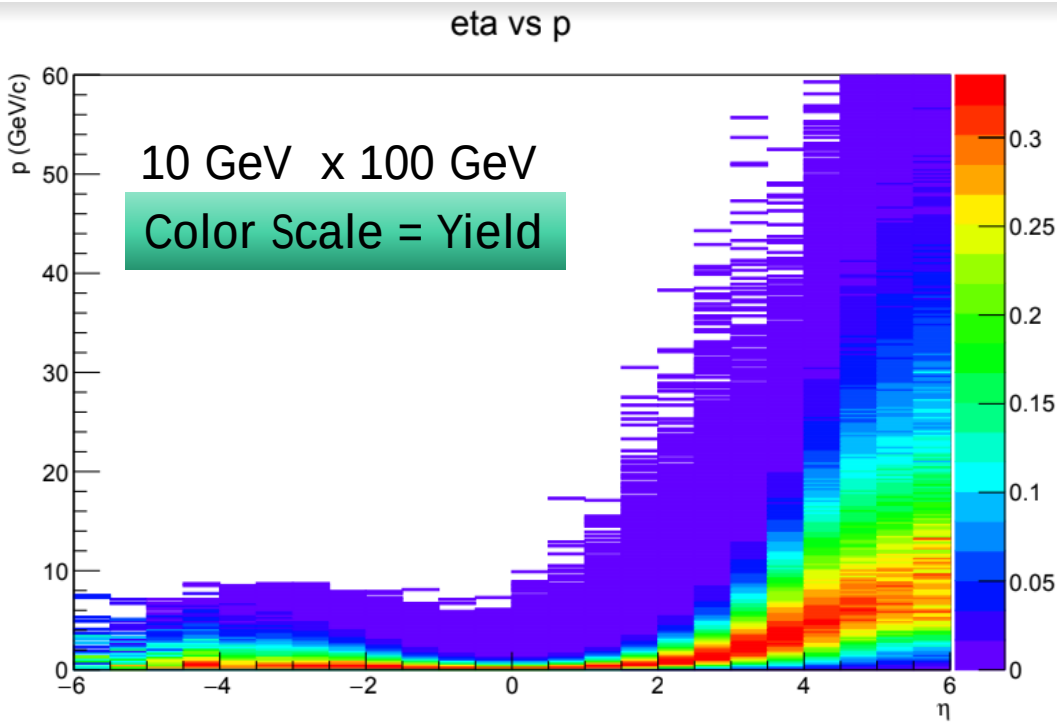


compare

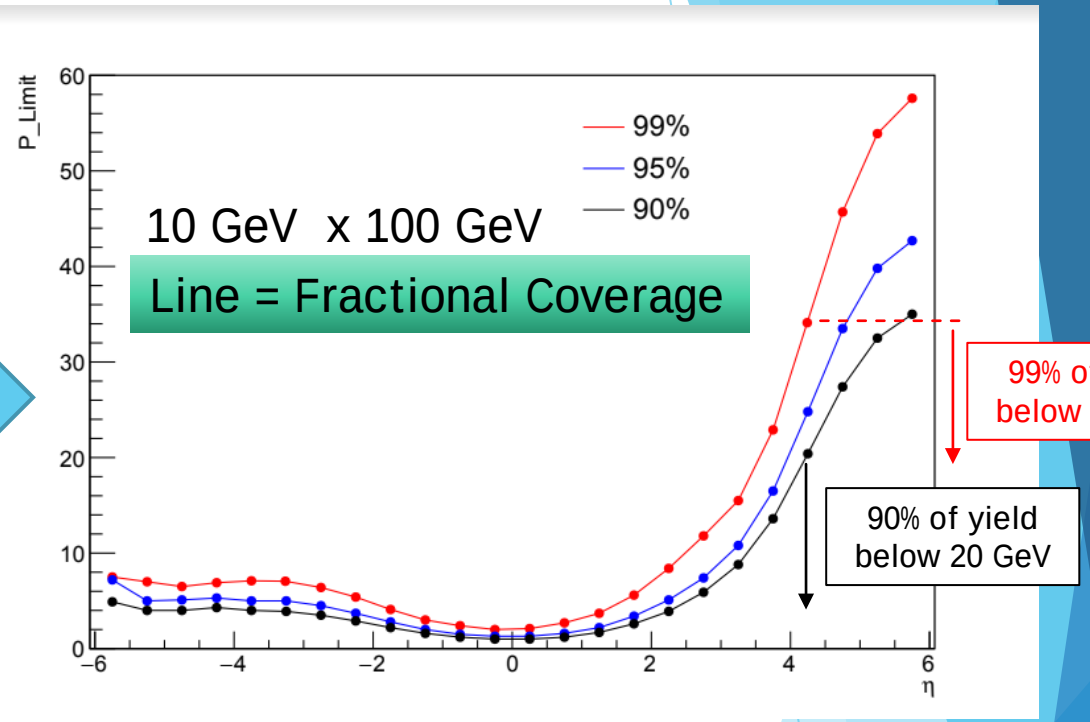


- Each process in each kinematic range generates yield.
- To advance detector designs, we must compress the data:
  - User-defined subset of process/kinematics. (subset == complementarity)
  - Project yield into PID-relevant parameter (momentum reach)
  - Define most demanding profile.
  - Overlay with detector performance.

Yield → Limits

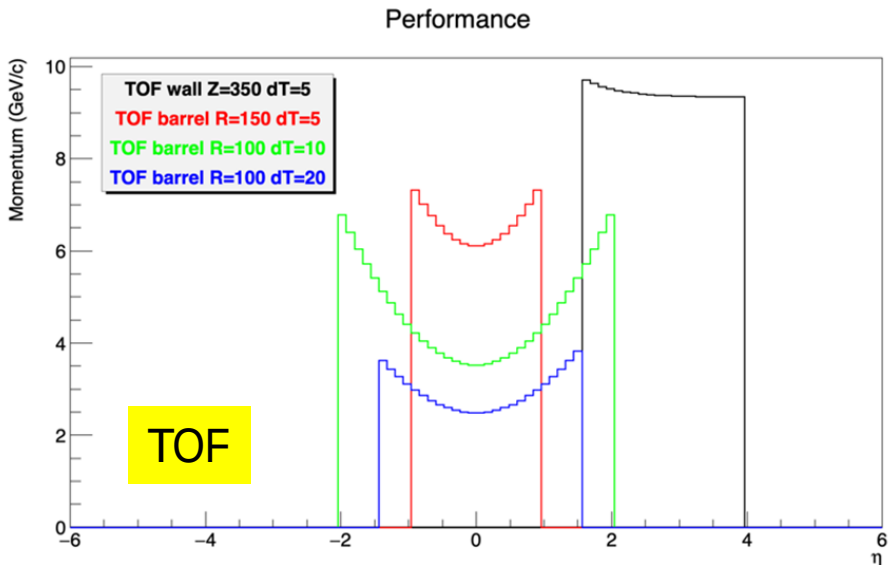


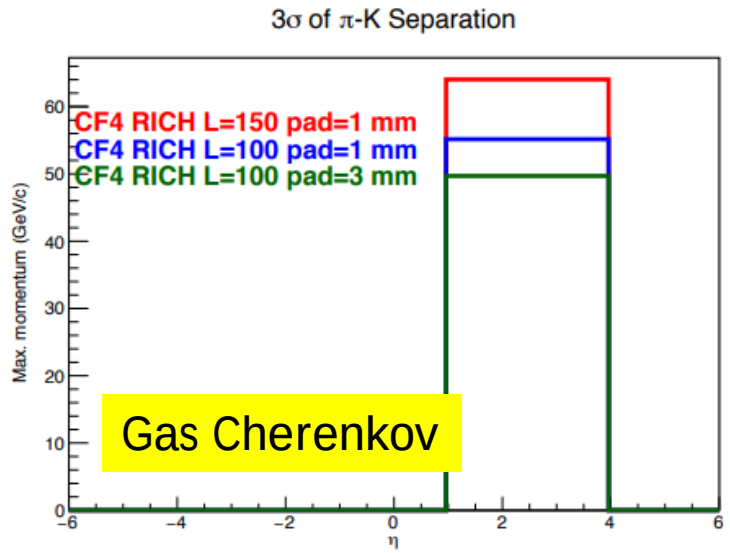
transform

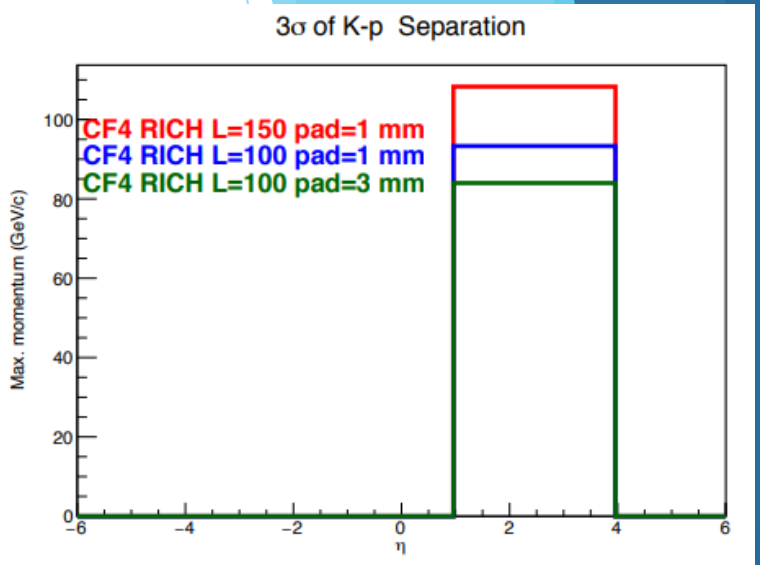


- First reduction is to take yield to momentum range limit (quite trivial)
- PWG is requested to supply to us:
  - Defined list of "benchmark processes" and relevant kinematic ranges.
  - Guidance for relevant PID measure (event-by-event or integrated).
  - For each "benchmark process":
    - normalized yield in kinematic bins.
- Yields → Limits → Demand → Comparison we can easily handle.

Detectors Already Implemented







- Detector groups have already supplied code for their performance
  - Common base class.
  - Apples-to-apples
- Ready (and anxious) to combine this with relevant physics!

Implementation Scheme

- Request from software group:
  - Rapidly generate a common plan that can be distributed.

- Request from physics groups:
  - Process by process p-vs-eta plots.

Our community should push on this process

- Request from Detector Folks:
  - Code to implement the PID inheritance.

- Make a site (Jupyter?) that allows:
  - Users make a “check box” of physics to generate a “Most Demanding”
  - Users make overlays of any/all detector performance technologies.