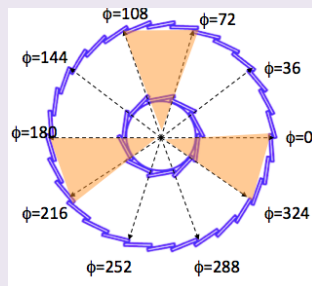


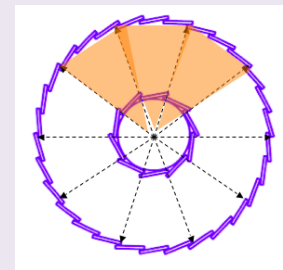
HFT-prototype BUR considerations for Run-13

- The main goal of the HFT engineering run will be *system verification and correction*; this includes the study of the *collision environment, detector response, backgrounds, operational experience, first attempts on Alignment* and basic *detector performance* (e.g. DCA resolution).
- At the same time we performed simulation studies to determine what physics could be done in Run-13 assuming that a certain number of sectors have sensors?
 - Relates to how long would be the AuAu run, if any.
 - How many sectors will have sensors- \rightarrow can we change/afford changes in configuration?
 - Is there a possibility for a **high pt trigger** in prototype acceptance? What are the peripheral-event rates (error defining) for a given threshold? This makes sense only for the Joined-configuration
- Need realistic data-taking rates, duty factors, detector 'up' estimates
- **Full simulations are underway and about to finish**



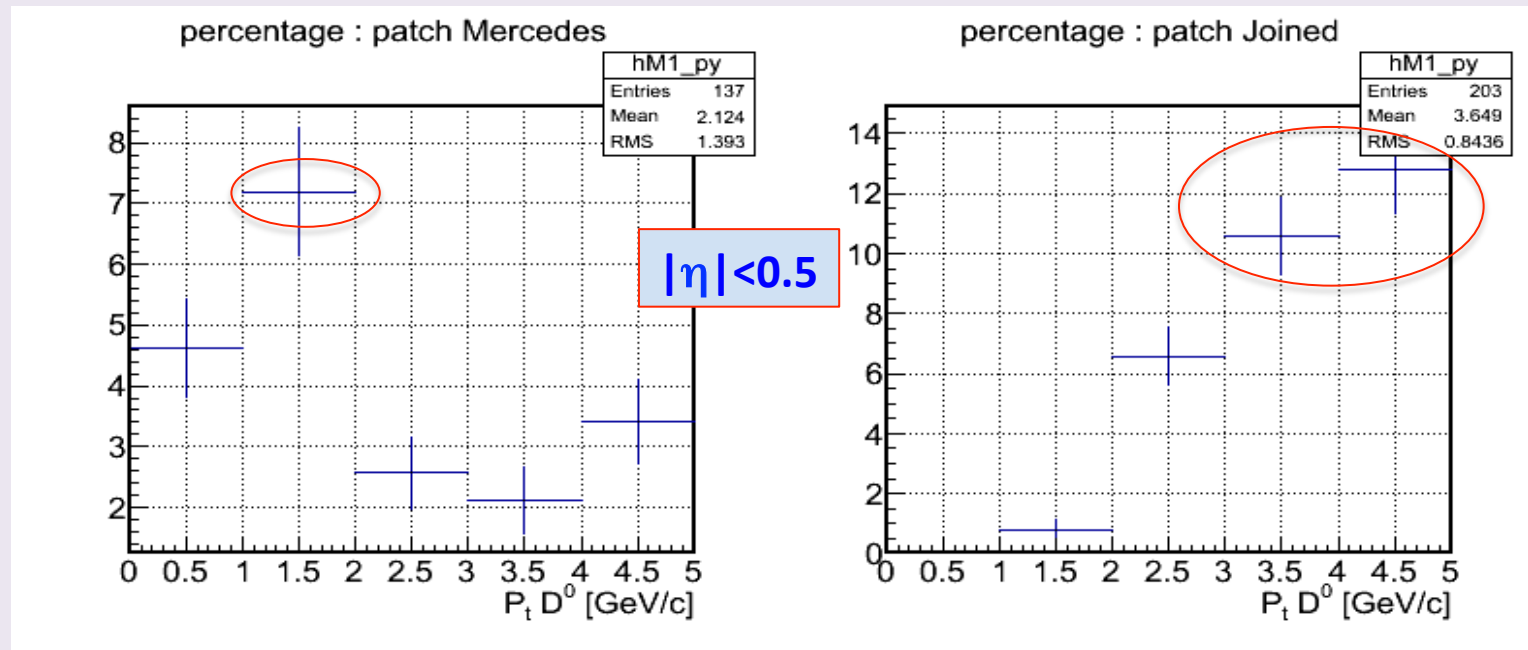
Mercedes config. – low pt D0

Assuming 3-sectors equipped



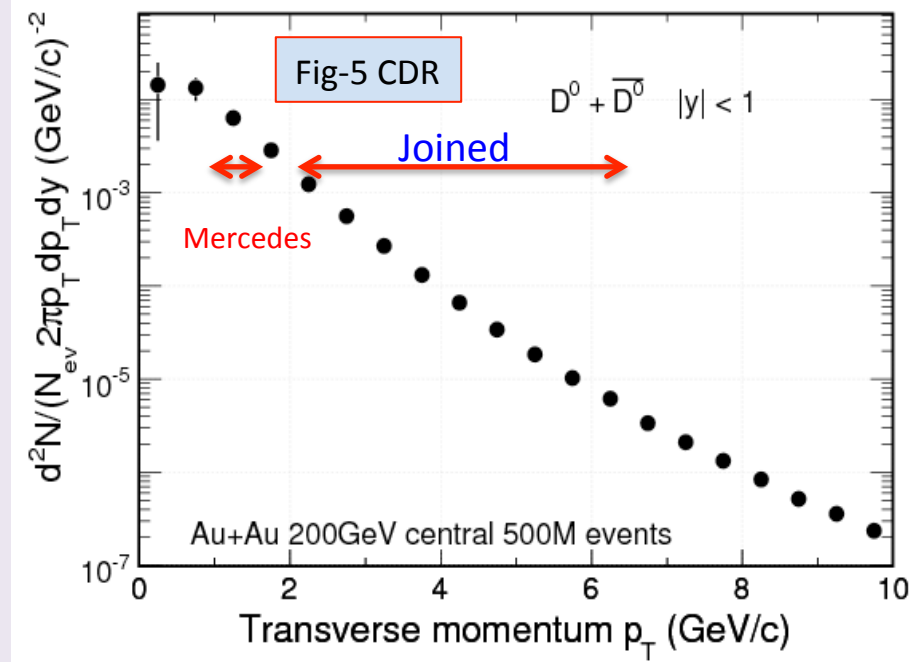
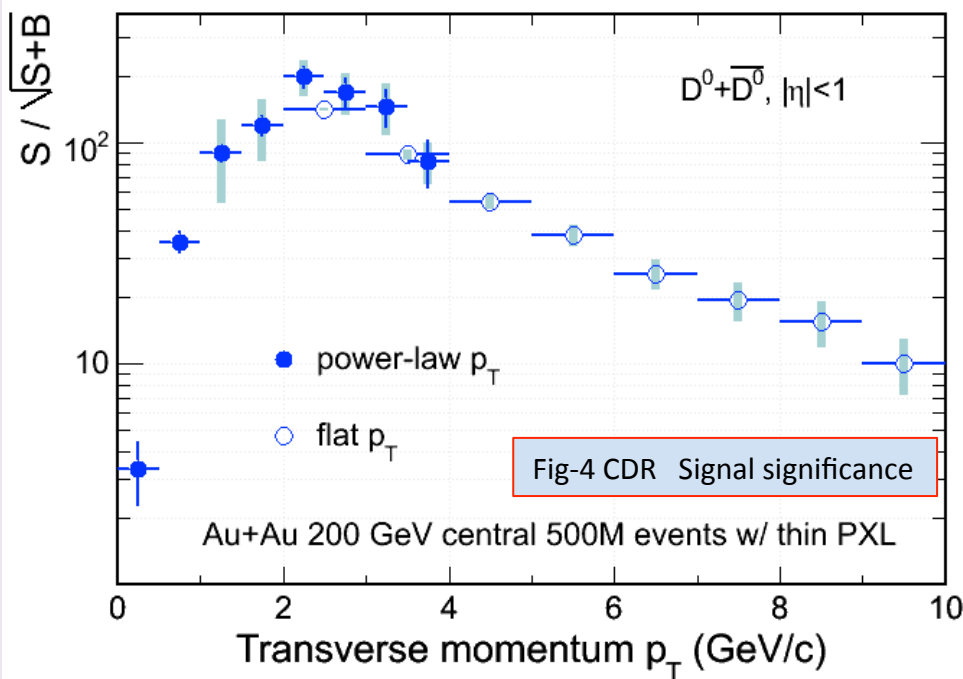
Joined config. – higher pt D0

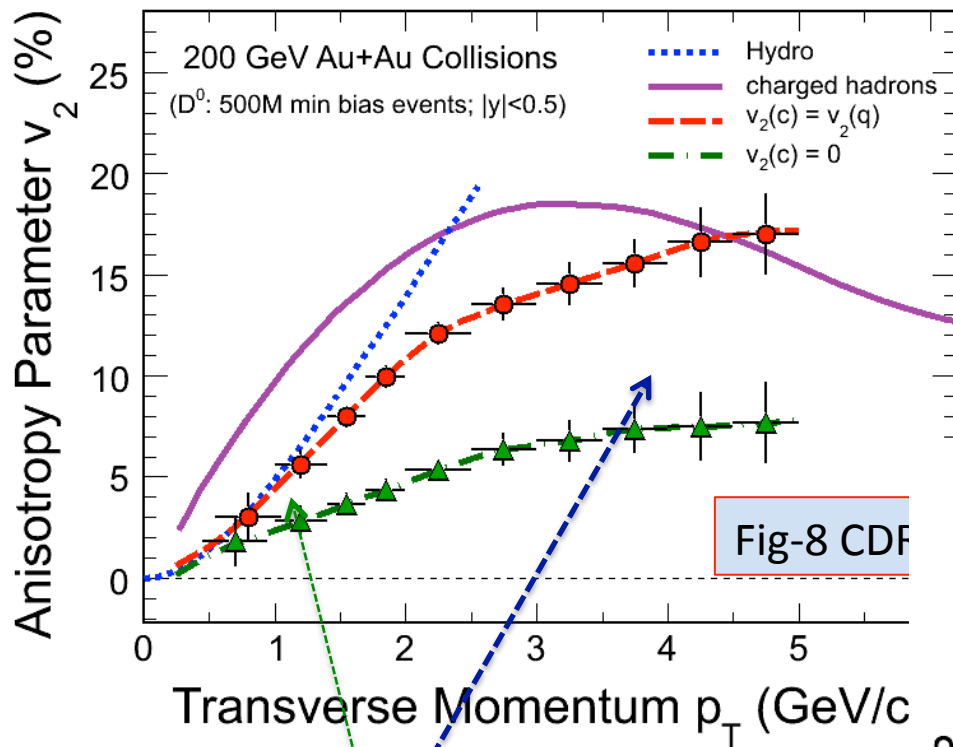
- **Single track efficiency (STE)** changes about $\sim 10\%$ for all pt (from $\sim 80\% \rightarrow 70\%$), so impact on D0 signal is $\sim 15\%$ (or multiplication factor .85) for ideal TPC. In really TPC \rightarrow PXL tracking needs rethinking.
- For *Mercedes* or *Joined* configuration we have *geometrical acceptance (ACC)* penalty for D0s
 - Acceptance doesn't affect $S/(S+B)$ but lowers signal significance $S/\sqrt{S+B}$



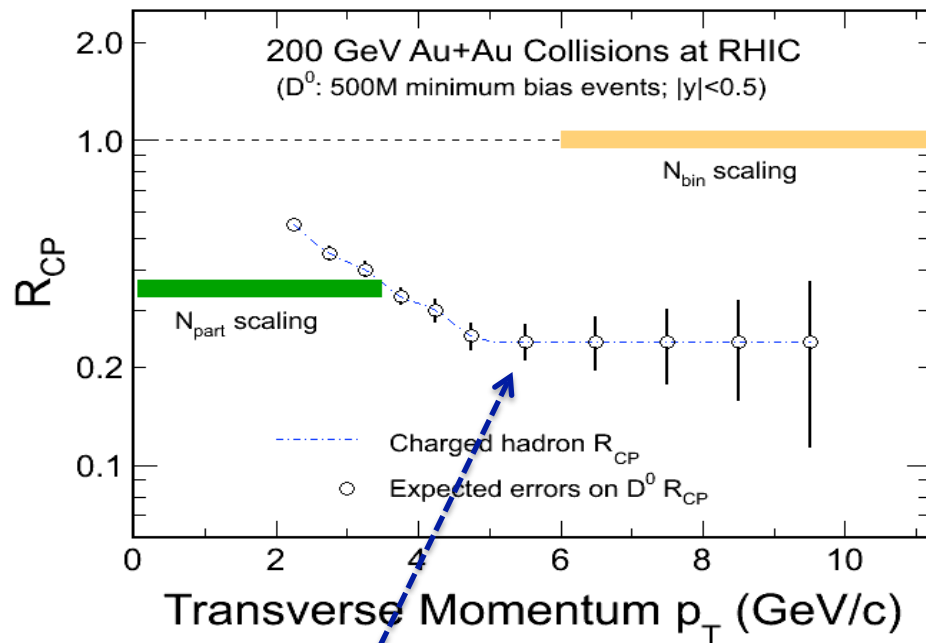
Rough estimates:

- For 500 Million AuAu 200 GeV events (CDR plot input).
 - This can be a couple of weeks running time in Run-13 provided things are not going to be terribly wrong.
 - Needs a VPD event vertex trigger to constraint it within ± 5 cm
- The pt spectra plot errors should be increased @ 1 GeV **only** pt by a factor of **3-4** for the Mercedes prototype, and the same factor @ ≥ 5 GeV for the Joined prototype. *This number results from evaluating the signal significance with the new penalties in track efficiency and acceptance combined for these two sweet spots.*
- ***We should be able to do something !***





With larger errors lower p_T is not useful and higher p_T needs statistics



With larger errors higher p_T needs statistics since TOF is doing lower p_T thoroughly

Summary

- Depending on events on tape AND # of sectors available AND %-detector alive AND ... we should be able to get a x-section and a R_{CP} estimate
- Need to be confirmed by ongoing simulation studies
- If only ONE configuration is allowed then *Joined* seems to be the one to run, since it explores the higher pt area which is also easier to reconstruct (high pt tracks).
 - But keep in mind that HFT's advantage is at lower pt over Phenix