Analysis of π^0 in the large 2014 200 GeV Au+Au dataset

In 2014 large amount of Au+Au data were collected. This makes it possible to extend the transverse momentum range and improve the systematic uncertainties.

Study DHM (dead-hot-map)

Applying several condition then organize these parameters in our analysis's "DHM" will help to identify the malfunctioning towers.

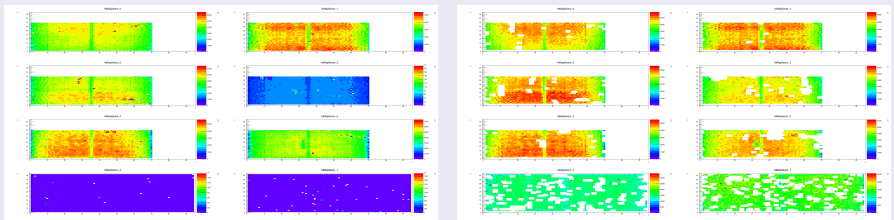

Figure: Raw hit map befor (the left side) & after (the right side) applying DHM.

Apply DHM

As a result, here we apply the final DHM to see how does it work.

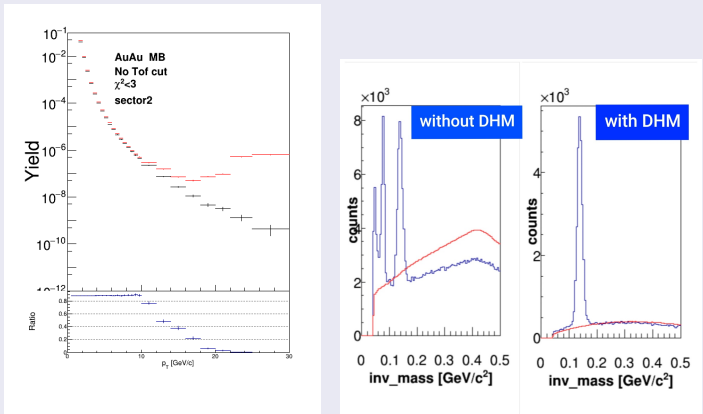

Figure: γ (w/wo)-DHM (left) & The invariant mass distributions of π^0 (right).

The Method of π^0 Extraction

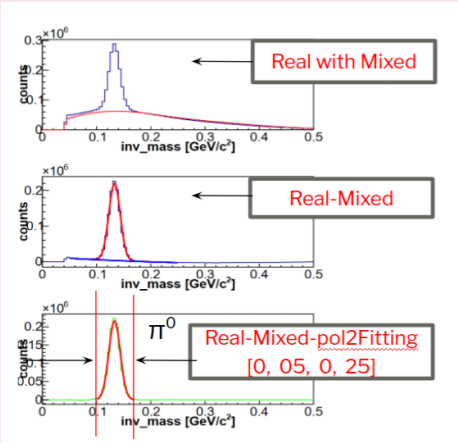

Figure: Mixed Event Background Subtraction Method (low p_T).

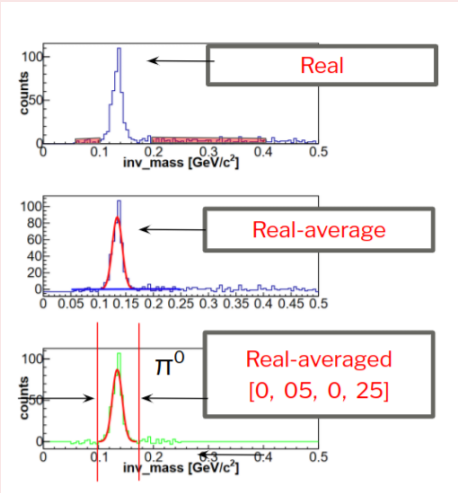

Figure: Background Subtraction by Average Bin Content (High p_T).

Raw π^0 in centrality classes (MB)

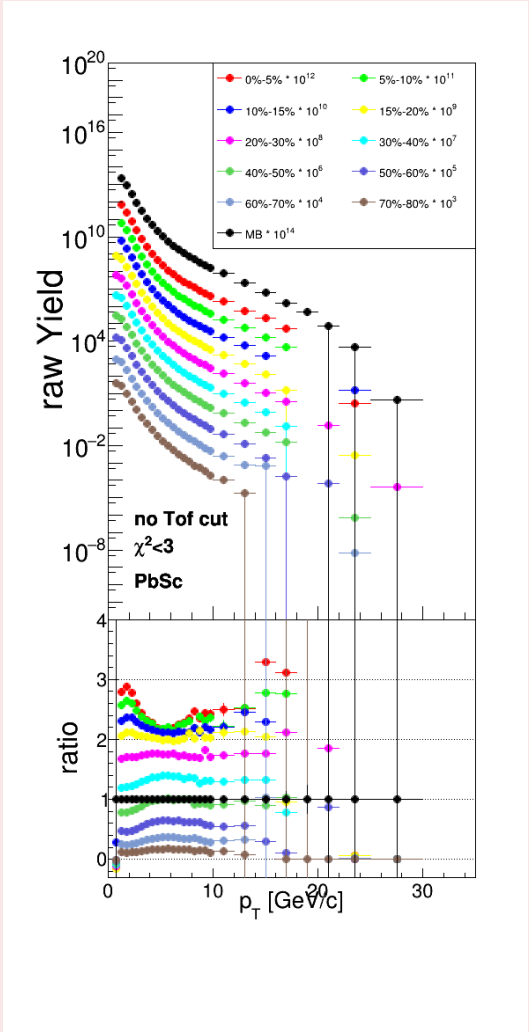

Figure: The raw yield of π^0 in centrality bins(upper) and the ratios of individual centrality to MB(lower).

Raw π^0 from MB & ERT trigger

Comparison of the raw π^0 yields in different centrality bins indicates that the shapes at high p_T vary only slowly, as found in earlier publications.

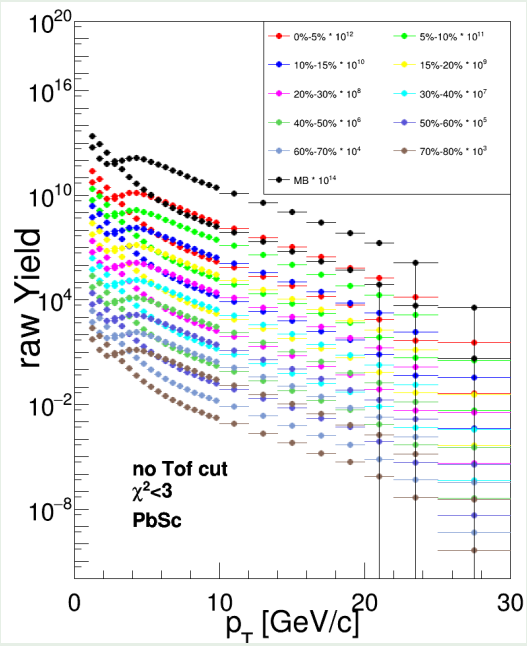

Figure: The raw yield of pi0 in centrality classes for MB & ERT trigger.

Summary

- PHENIX measurement of π^0 & direct photons at high p_T reachable at RHIC.
- This poster reports on the work in progress of the analysis of 2014, with statistics exceeding all previous data combined .
- The methods clarify the importance of data QA.
- Since these are uncorrected, raw data and the acceptance, efficiency and smearing corrections are large and strongly centrality dependent, no physics conclusions drawn yet.