



Strangeness Production in U+U vs $\sqrt{s_{NN}} = 193\text{GeV}$ collisions at RHIC

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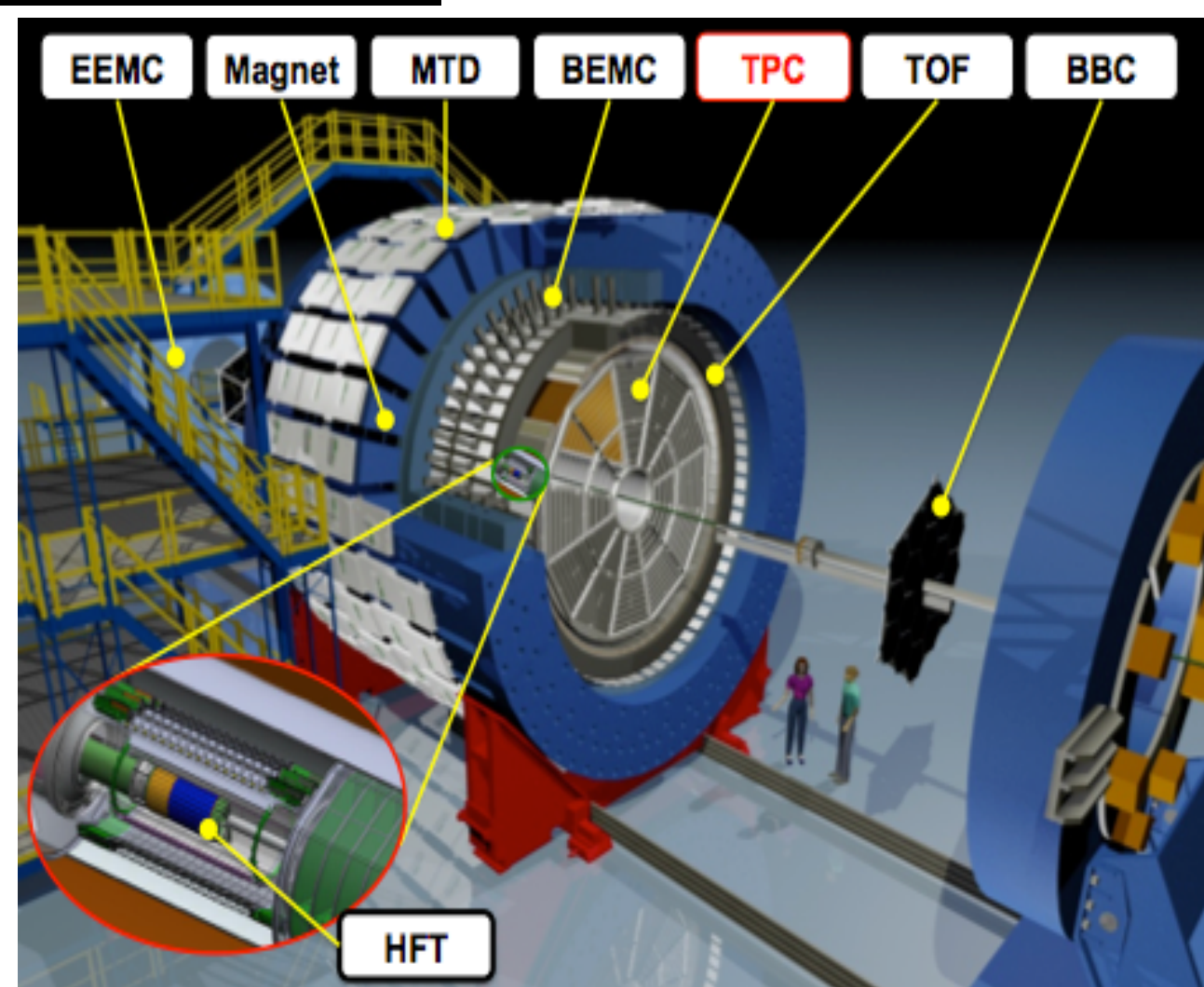
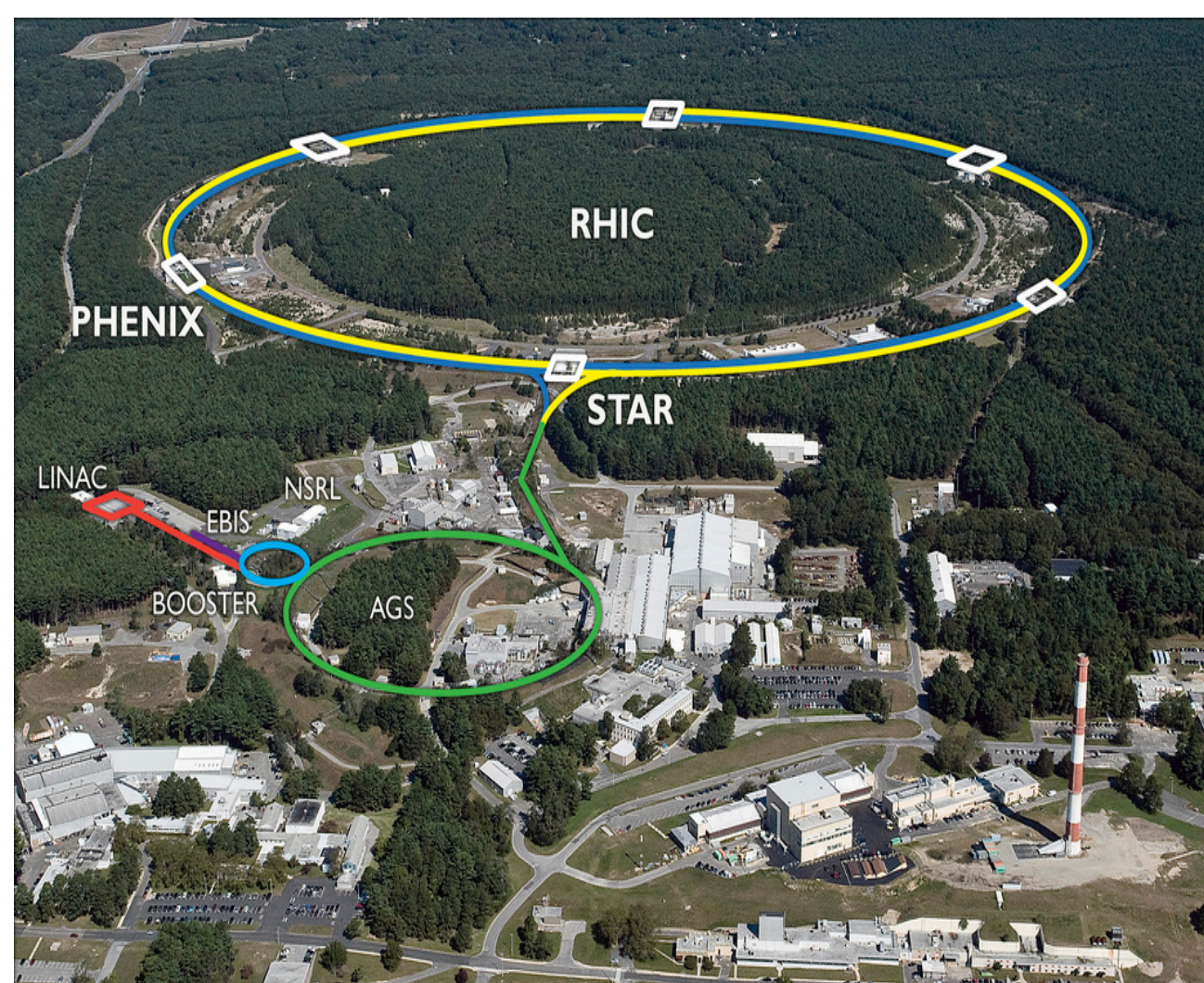


Abstract

Study of strangeness production in heavy ion collisions can infer properties of deconfined state of quarks & gluons such as baryon to meson enhancement, anti baryon to baryon ratio, nuclear modification factor & strangeness enhancement.

Unlike spherical nuclei like Au or Cu, U have intrinsic prolate deformation shape, which allows U+U collisions to have different geometrical orientation during collision. Moreover U+U collision can be characterized by larger energy density and and larger life time of fireball than Au+Au system .

STAR Experiment at RHIC



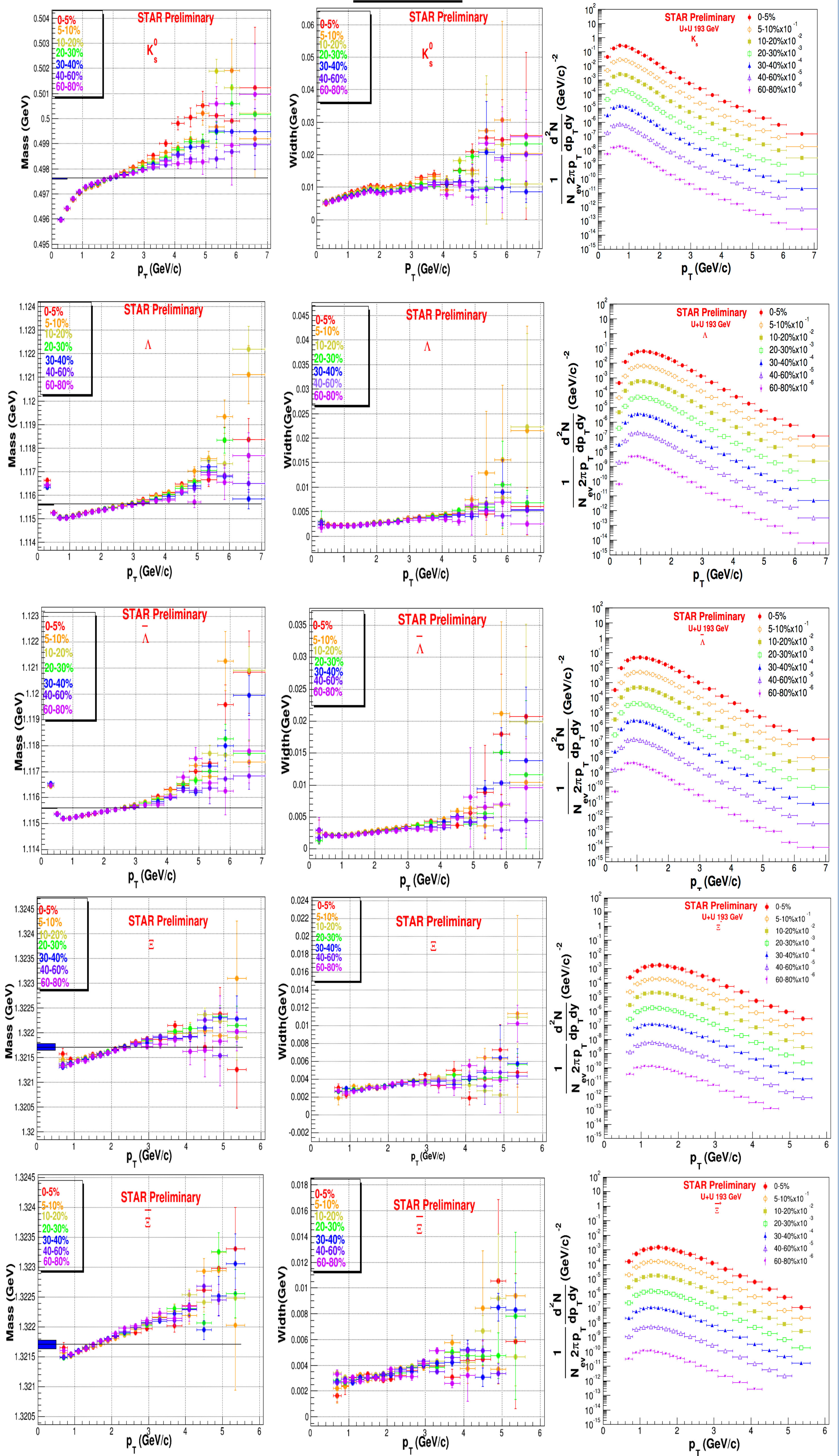
- Colliding systems: Au+Au, Cu+Cu, Cu+Au, U+U, d+Au, He+Au, p+p

- Center of mass energy: $\sqrt{s_{NN}} = 7.7\text{GeV}$ to 200GeV

TPC detector is used for this analysis.

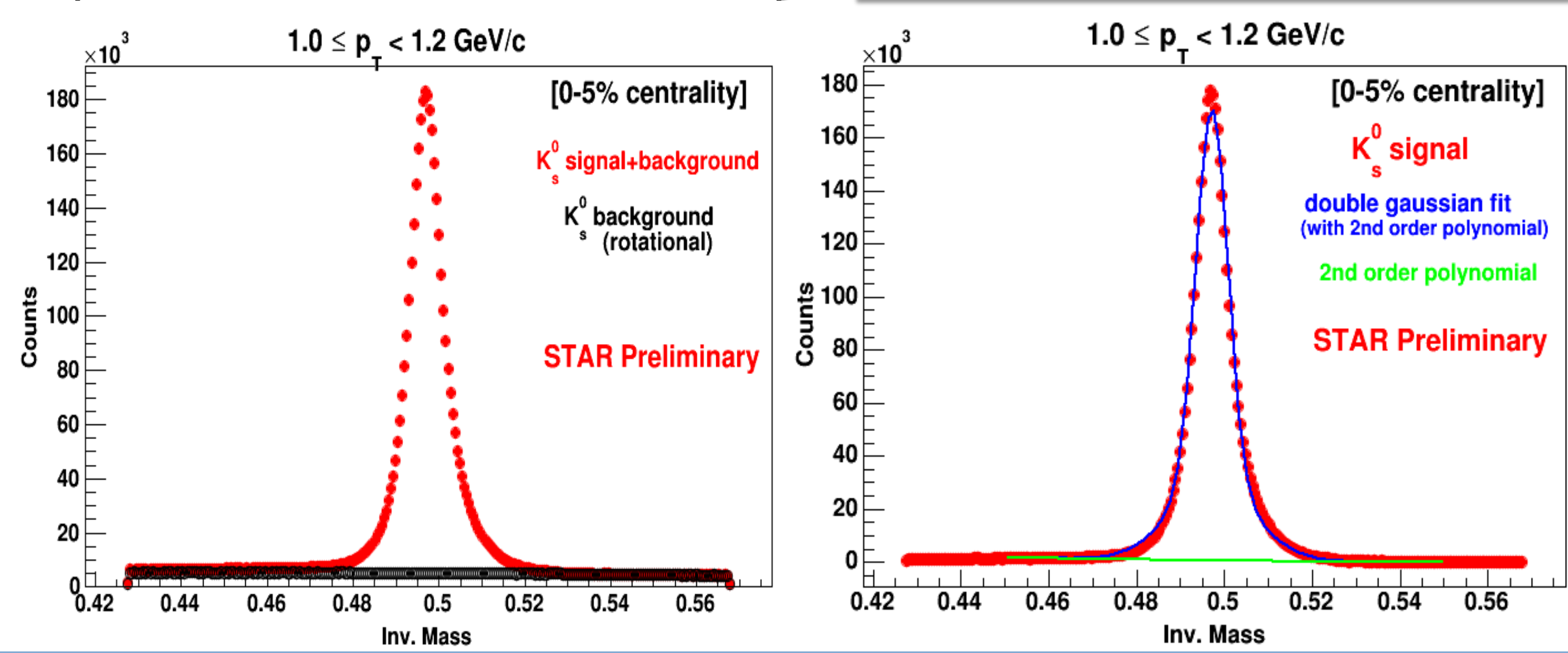
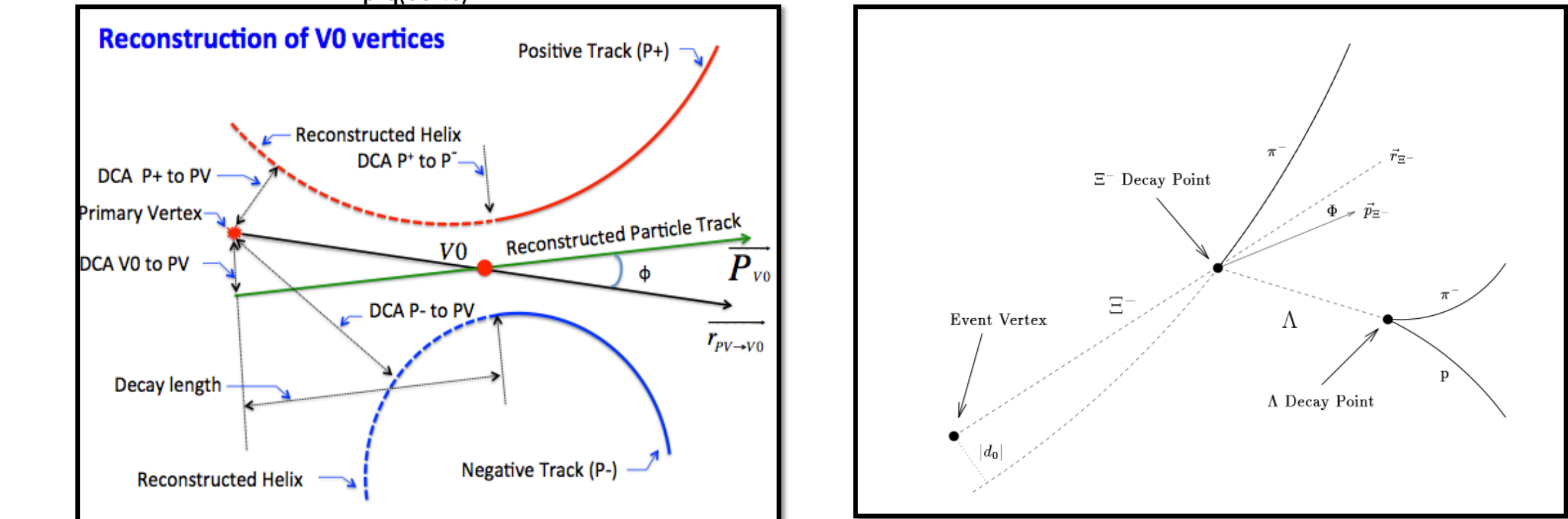
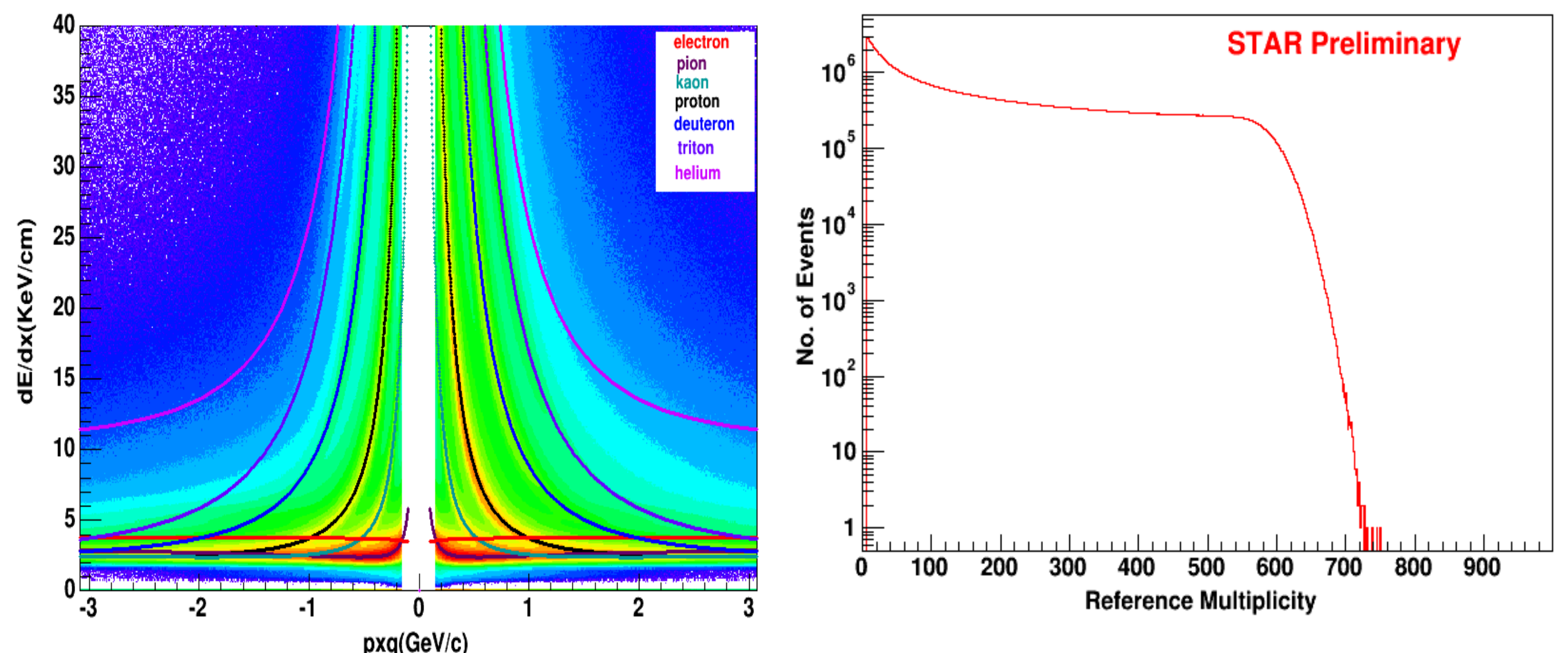
- Magnetic field: 0.5T
- Large acceptance: $|\eta| < 1.0$, $0 < \phi < 2\pi$
- Excellent particle identification capabilities (Using Time Of Flight and Time Projection Chamber)

Results:



Error bars are statistical only.

Analysis Technique



- ✓ First measurement of strange hadrons (K_s , Λ & Ξ) in U+U vs $\sqrt{s_{NN}} = 193\text{ GeV}$ data via their dominant hadronic decay channels.
- ✓ Raw spectra analyzed in 7 different centralities.
- ✓ Measured mass of these particles are consistent with PDG value (less than 1% deviation).
- To incorporate detector acceptance & efficiency correction.