



Contribution ID: 320

Type: **Contributed talk**

## The Rapidity Density Distributions and Longitudinal Expansion Dynamics of Identified Pions from the STAR Beam Energy Scan

*Tuesday 29 September 2015 11:50 (20 minutes)*

The Beam Energy Scan (BES) at the Relativistic Heavy-Ion Collider was proposed to characterize the properties of the medium produced in heavy-ion interactions over a broad range of baryon chemical potential. The aptitude of the STAR detector for mid-rapidity measurements has previously been leveraged to measure identified particle yields and spectra to extract bulk properties for the BES energies in this kinematic window. However, to extract information on expansion dynamics and full phase space particle production it is necessary to study identified particle rapidity density distributions.

In this talk, we present the first rapidity density distributions of identified pions from Au+Au collisions at  $\sqrt{s_{NN}} = 7.7, 11.5, 14.5, \text{ and } 19.6$  GeV from the Beam Energy Scan program as measured by the STAR detector. We use these distributions to obtain the full phase space yields of the pions to provide additional information of the system's chemistry. Further, we report the width of the rapidity density distributions compared to the width expected from Landau hydrodynamics. Finally, we interpret the results as a function of collision energy and discuss them in the context of previous energy scans done at the AGS and SPS.

### **On behalf of collaboration:**

STAR

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**Session Classification:** Collective Dynamics II

**Track Classification:** Collective Dynamics