QUARK MATTER 2015
Sep. 27 – Oct. 3, 2015 Kobe, Japan

Contribution ID: **370** Type: **Contributed talk**

# PHENIX results on centrality dependence of yields and correlations in $d$+Au collisions

*Wednesday 30 September 2015 10:50 (20 minutes)*

Measurements of the $v_2$ of identified hadrons and of azimuthal correlations between rapidity separated soft particles strongly suggest the presence of collective effects in central $d$+Au collisions at $\sqrt{s_{NN}}$=200 GeV. The good agreement between low viscosity hydrodynamic calculations and experimental results also suggests a close relationship between the effects observed in high multiplicity $d$+Au and heavy-ion collisions. This relationship can be further explored by extending the measurements to higher transverse momentum where physical effects such as jet fragmentation and energy loss begin dominating particle production. Another handle is provided by a detailed study of centrality dependence of the observed phenomena to pinpoint momentum versus centrality domain where the collective effects manifest themselves. Intermediate and high-$p_T$ particle measurements also contribute to the systematic study of the baryon anomaly and jet quenching by placing constraints on cold-nuclear-matter effects. PHENIX has unique capabilities for measuring azimuthal correlations between high $p_T$ neutral pions at midrapidity ($|\eta| < 0.35$) and clusters measured in the muon piston calorimeter (MPC) at forward rapidity ($-3.7 < \eta < -3.1$), providing effective separation of jet bias contributions. We present new PHENIX results on rapidity separated $\pi^0$-MPC azimuthal correlations measured over a wide $p_T$ range in different centrality $d$+Au collisions at $\sqrt{s_{NN}}$=200 GeV. We also report recent PHENIX results on intermediate and high $p_T$ hadron production.

## On behalf of collaboration:

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**Session Classification:** Collective Dynamics IV

**Track Classification:** Collective Dynamics