Back-to-back di-π^0 azimuthal correlations at forward rapidities at STAR

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Abstract

The back-to-back di-π^0 correlation functions in forward directions have been observed to be suppressed in $p(d)$+A collisions relative to p+p collisions. The nonlinear gluon dynamics in nuclei is one of the possible mechanisms responsible for the suppression. In addition, theorists pointed out that the double-parton scattering (DPS) can be an alternative explanation of the suppression in d+A collisions. During the 2015 and 2016 RHIC runs, STAR collected data with the Forward Meson Spectrometer (FMS, $2.6 < \eta < 4.0$) in p+p, p+Al, p+Au, and d+Au collisions at $\sqrt{s_{\rm NN}} = 200$ GeV. The recorded datasets enable the measurements of di-π^0 azimuthal correlations in p+p and p+A collisions with different mass numbers. Meanwhile, a comparison of the correlations in d+Au and p+Au collisions provides an opportunity to study the impact of DPS. In this talk, we will present the results on di-π^0 correlations at forward rapidities in p+p and p+A collisions, together with the preliminary results in d+Au collisions.