Contribution ID : 121

K^* meson production in $p+p$ and d+Au collisions at $\sqrt s_{NN}$ = 200 GeV with PHENIX experiment at RHIC

Content :

Resonances having very short life time ($\sim$few fm/c)provide unique capabilities to probe the hadron production mechanisms and the collision dynamics in heavy ion collisions at RHIC. To isolate phenomena related to the dense and hot medium created in such collisions and to understand cold nuclear matter effects, it is important to measure particle production in smaller collision systems like $p+p$ and d+A. Comparison of the mass, width for K^* in $p+p$, d+Au and heavy ion collisions will give information on the interactions taking place in quark gluon plasma or hadronic matter. Measuring the K^* yields from intermediate p_T (2 $<$ p_T GeV/c $<$ 5) to high p_T (p_T $>$ 5 GeV/c), one can study multiple re-scattering of partons in the initial state, parton energy loss and quark recombination processes, which will help in understanding different suppression patterns for meson and baryons.

We report the measurement of the K^* in $p+p$ collisions at $\sqrt{s}$ = 200 GeV via its hadronic decay ($K^{*}(892)\rightarrow \pi K$) with the PHENIX detector. The techniques used for the measurement of the K^* spectrum in $p+p$ collisions are established and used to get the K^* signal in d+Au collisions. The current status of the analysis in d+Au collisions will also be presented. The STAR experiment measured the K^* production up to p_T $\sim$ 3.5 GeV/c, whereas the present results extend the measurement range up to 7.5 GeV/c. These results are used to study hadronic matter effects at intermediate and high p_T and set a baseline for study of QGP signals in heavy ion collisions.

Collaboration :

PHENIX

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Session classification : --not yet classified--

Track classification : --not yet classified--

Type : --not specified--