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Low Vector meson production in p+p collisions at $\sqrt{s} = 510$ GeV in PHENIX and dependence of ϕ production cross section from RHIC to LHC energies

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Low mass vector mesons (ρ , ω and ϕ) provide important information on the hot and dense state of strongly interacting matter produced in heavy ion collisions. Among them, strangeness enhancement, a phenomenon associated with soft particles in the bulk matter, can be accessed through the measurement of the ratio $\phi/(\rho + \omega)$. Low mass vector meson production in p+p collisions provides a reference for this study. In addition, vector meson production in p+p collisions is an important tool to study QCD, providing data to tune soft phenomenological QCD models and to compare to hard pQCD calculations.

The PHENIX experiment at RHIC is capable of studying low-mass vector meson production with two muon spectrometers covering the rapidity range $1.2 < |y| < 2.2$, offering a complementary measurement to the one done at mid-rapidity.

In this poster we report the latest PHENIX results on the measurement of differential cross sections, p_T and rapidity dependencies of $(\rho + \omega)$ and ϕ mesons production in p+p collisions at $\sqrt{s} = 510$ GeV based on the data sample collected in 2013.

Forward rapidity ϕ production cross section was measured in p+p collisions at RHIC and LHC energies. The status of the comparison study of those experimental results to model calculation is presented.

On behalf of collaboration:

PHENIX

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