

## **$\phi$ spin alignment w.r.t global angular momentum reconstructed with 1st order event plane**

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The spin alignment of the  $\phi$ -meson could be sensitive to different hadronization scenarios and the vorticity of the colliding system. We present the spin alignment measurements of  $\phi$ -mesons produced at mid-rapidity with transverse momentum up to 5 GeV/c in STAR. The alignment is quantified by the diagonal spin density matrix elements  $\rho_{00}$  with respect to the normal of the 1st order event plane, which itself is reconstructed with the Zero Degree Calorimeter. The results will be presented as a function of the transverse momentum and collision centrality for the beam energies of 11.5, 19.6, 27, 39 and 200 GeV. The implications of our results will be discussed.

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