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## Understanding $\phi$ meson production through polarisation study in pp collisions with ALICE at the LHC

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The study of the production of  $\phi$  meson has always been of great interest both in elementary and heavy-ion collisions. As observed by ALICE, strangeness enhancement in high-multiplicity pp collisions is one of the potential manifestations of QGP formation. Recent results at LHC suggest that  $\phi$  behaves like a particle with net strangeness between 1 and 2 in small systems. These observations unfold new directions for theoretical and experimental studies of  $\phi$  meson production in small systems. Polarization measurements of vector mesons are crucial for understanding the particle production mechanisms in high-energy collisions. In non-central heavy-ion collisions, the presence of a large initial angular momentum can polarise the vector mesons. This might be either due to spin-orbital-angular-momentum interaction or by hadronization from polarized quarks. The  $\phi$  meson polarisation in pp collisions could be used as a reference while interpreting the results from heavy-ion collisions. The huge data sample collected during the Run 2 of the LHC measurements gives access to look for the multiplicity dependence of this measurement. This poster will present the perspectives for new results on the multiplicity dependence of  $\phi$  meson polarisation in pp collisions at  $\sqrt{s} = 13$  TeV in the helicity reference frame.

**Author:** Dr KHUNTIA, Arvind

**Presenter:** Dr KHUNTIA, Arvind

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