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## Elliptic flow and longitudinal polarization of hyperons in Run 3 Pb-Pb collisions with ALICE

Particle production in heavy-ion collisions exhibits a collective behaviour known as collective flow, which arises from the pressure-driven expansion of the quark-gluon plasma (QGP) formed in these collisions.

The second-order Fourier coefficient of a series expansion of the azimuthal distribution of final-state particles is known as elliptic flow ( $v_2$ ). A non-zero  $v_2$  can lead to the formation of local vorticities in the QGP along the beam axis, which, via spin-orbit coupling, are expected to induce a longitudinal component in the polarization of hadrons.

The  $v_2$  and the polarization provide valuable insights into the early dynamics of heavy-ion collisions and the properties of the QGP, such as its shear and bulk viscosities.

This poster presents the measurement of the elliptic flow of  $\Xi$  hyperons across different centrality classes and transverse-momentum intervals with unprecedented precision, using a high-statistics sample of Run 3 Pb-Pb collisions at  $\sqrt{s_{NN}} = 5.36$  TeV collected by the ALICE experiment. Additionally, the first measurement of  $\Xi$  longitudinal polarization at the LHC energies is presented.

### Category

Experiment

### Collaboration (if applicable)

ALICE collaboration

**Author:** DE MARTIN, Chiara (Universita e INFN Trieste (IT))

**Presenter:** DE MARTIN, Chiara (Universita e INFN Trieste (IT))

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