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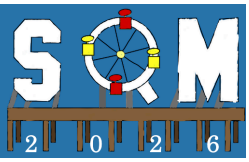

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Probing the onset of collectivity with identified hadrons and ultra-long-range correlations in light-ion collisions at LHC-ALICE

Wednesday, 25 March 2026 08:45 (20 minutes)

Collective behaviors in pp and p–Pb collisions have sparked debate on the onset of hydrodynamics in small systems. However, the proton's poorly constrained geometry has hindered definitive conclusions. The 2025 LHC runs with OO and Ne–Ne collisions provide a unique solution: their well-defined initial states allow a direct test of whether collectivity stems from hydrodynamic flow or initial-state correlations.

In this talk, we present the first ALICE measurements of anisotropic flow (v_n) for identified hadrons ($\pi^{\pm}$, $K^{\pm}$, p($\bar{\text{p}}$), K^0_S, and Λ) and ultra-long-range two-particle azimuthal correlations with pseudorapidity separation $|\Delta\eta| > 6.5$ in Ne–Ne and OO collisions at the LHC. A clear mass ordering at low p_{T} and baryon–meson v_2 grouping and splitting at intermediate p_{T} are observed in light-ion collisions, consistent with partonic collectivity seen in heavy-ion systems. Combined with the long-range correlation results, these data provide stringent constraints on initial-state models and medium dynamics. This comprehensive study bridges the gap between pp and heavy-ion collisions, offering decisive insights into the origin and onset of hydrodynamic behavior in the smallest QCD systems.

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