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Collective effects and heavy-flavour muon production in oxygen-oxygen collisions at $\sqrt{s_{NN}} = 5.36$ TeV with EPOS4

Oxygen--Oxygen (OO) collisions provide an important intermediate system between proton--proton and light-ion collisions, offering a unique opportunity to investigate particle production and collective effects in a relatively light-ion collision system.

In this contribution, OO collisions at $\sqrt{s_{NN}} = 5.36$ TeV were simulated using the EPOS4[1] event generator. The nuclear modification factor R_{OO} for light-flavour particles and inclusive muons is studied to characterise particle production in OO collisions relative to proton--proton collisions at $\sqrt{s_{NN}} = 5.36$ TeV. In addition, the elliptic flow coefficient (v_2) of charged particles and inclusive muons has been studied to describe the anisotropic dynamics of the produced systems. Furthermore, the inclusive muon v_2 will emphasise the anisotropy of heavy-flavour muons. The combined study of v_2 and R_{OO} will give complementary information on collective effects and particle production and provide predictions for heavy-flavour observables in light-ion collision systems.

[1]K. Werner, "Revealing a deep connection between factorization and saturation: New insight into modeling high-energy proton-proton and nucleus-nucleus scattering in the EPOS4 framework," Phys. Rev. C 108, 064903 (2023).

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