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Feasibility study of anisotropic flow measurements for ϕ -mesons in the MPD experiment using enhanced production

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Measurements of collective flow provide access to the equation of state (EOS) of dense baryonic matter and offer insights into the initial collision geometry. Strange particles, produced during the hadronic phase, serve as probes of the strangeness enhancement mechanism in heavy-ion collisions. The ϕ vector meson resonance therefore plays a key role in future studies; however, reliable measurements of its directed (v_1) and elliptic (v_2) flow require large event statistics. In this work, we explore the feasibility of performing such measurements at the MPD experiment at 9.2 GeV by enhancing the dataset with simulated artificial ϕ -meson production to achieve sufficient statistical precision.

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