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Directed flow of light flavor hadrons

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Experimentally observed splitting of directed flow (v_1) between proton and anti-proton has been a challenging observable for the models to describe. We propose a two-component baryon deposition scheme driven by participants as well as binary collision sources. Evolving such a profile through a hybrid framework (hydrodynamics + hadronic transport), we are able to capture the v_1 of light flavor hadrons along with the splitting of v_1 between baryon and anti-baryon across beam energies ranging from $\sqrt{s_{NN}} = 200$ GeV to 7.7 GeV. We further demonstrate that recent STAR measurements of centrality dependence of v_1 split of oppositely charged hadrons that is expected to be signals of electromagnetic field receive large background contribution from the physics of baryon stopping.

Theory / experiment

Theory

Group or collaboration name

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