

Bayesian inference of nuclear incompressibility from collective flow in mid-central Au+Au collisions

Sunday 3 August 2025 10:00 (20 minutes)

The incompressibility K of symmetric nuclear matter is determined using a Bayesian analysis of collective flow data in mid-central Au+Au collisions at 400 MeV/nucleon using a Gaussian process (GP) emulator of the isospin-dependent quantum molecular dynamics (IQMD) model for heavy-ion collisions, considering scenarios with and without the momentum dependence of single-nucleon potentials. The purposes of this work are threefold. Firstly, we infer the K by Bayesian inference, with or without considering the momentum dependence of single-nucleon potentials. Secondly, we investigate how the inference of K may depend on the observables used. Thirdly, we investigate the energy dependence of the incompressibility K at 400-1500 MeV/nucleon using observables rapidity and transverse momentum dependence of proton elliptic flow.

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