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sPHENIX measurements of bulk properties of Au+Au collisions

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The sPHENIX experiment at RHIC is designed to explore the properties of strongly interacting matter through precision measurements of global observables in relativistic ion collisions, using full-azimuth calorimetry and high-resolution silicon tracking. This talk presents final results for measurements of the transverse-energy density ($dE_T/d\eta$) and charged-hadron multiplicity density ($dN_{ch}/d\eta$) in Au+Au collisions at 200 GeV, recently published as JHEP08(2025)075 and PRC112(2025)024908. The $dE_T/d\eta$ measurement, performed with the electromagnetic and hadronic calorimeters over $|\eta| < 1.1$, represents the first RHIC result using a hadronic calorimeter, providing improved precision and η -granularity compared to the state of the art. The $dN_{ch}/d\eta$ analysis, based on tracklets in the intermediate silicon tracker, achieves full-azimuth coverage and excellent agreement with previous RHIC measurements. Together, these new measurements provide important input for constraining theoretical descriptions of particle production and the initial conditions of heavy-ion collisions, and they are benchmarked against compilations of the latest predictions from modern Monte Carlo event generators. In addition, the status of the next steps of bulk property and collective flow measurements in Au+Au collisions will be discussed.

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