Measurements of Hyperons Global Polarization in Au+Au collisions at BES-II energies from RHIC-STAR

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The observation of hyperon global polarization along the system's angular momentum has revealed the existence of large vorticities in the medium created by heavy-ion collisions. Using the high-statistics data collected by the STAR experiment during the RHIC Beam Energy Scan II (BES-II) program with upgraded detector systems, we present the global polarization measurements for Λ, $\bar{\Lambda}$, $\Xi^{\pm}$ and $\Omega^{\pm}$ hyperons in Au+Au collisions at BES-II energies ($\sqrt{s_{\rm NN}} = 7.7, 9.2, 11.5, 14.6, 17.3, 19.6, 27$ GeV). Specifically, we focus on the possible differences in polarization between Λ and $\bar{\Lambda}$, as well as the polarization behaviors observed in different hyperons ($\Xi^{\pm}$ and $\Omega^{\pm}$). These results provide new insights into the polarization mechanism and vorticity fields in heavy-ion collisions as well as additional constraints on the properties and dynamics of the hot and dense matter created in these collisions.