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Strangeness-neutral Equation of State for QCD with a Critical Point[1] DAMIEN PRICE, ANGEL NAVA, JAMIE STAFFORD, CLAUDI RATTI, University of Houston, DEBORA MROCZEK, JACQUELYN NORONHA-HOSTLER, University of Illinois, PAOLO PAROTTO, University of Wuppertal — Our group presents a family of strangeness-neutral equations of state (EoS) for QCD. This family exhibits correct critical behavior, matches results on Taylor expansion coefficients from Lattice QCD, is compatible with the SMASH hadronic transport approach, and fits in temperature and chemical potential ranges relevant to the Second Beam Energy Scan (BESII)at RHIC. With strangeness-neutrality conditions in mind the BES-EoS software that produces the EoS has been updated. This makes the BES-EoS more accurately reproduce the system in a heavy-ion collision, which is known to possess zero global strangeness density and a fixed ratio of electric charge to baryon number. By utilizing the behavior of a critical point in the 3D Ising model universality class, the code outputs thermodynamic quantities relating to the behavior involving the critical point in the QCD phase diagram. With this output in combination with data from the BESII we hope to help constrain the location of the critical point in the QCD phase diagram. We also present a comparison of the isentropic trajectories in a strangeness-neutral system as opposed to the previous version not including strangeness-neutrality.

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