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Strangeness-Neutral Equation of State for QCD with a Critical Point[1] DAMIEN PRICE, ANGEL NAVA, CLAUDIA RATTI, JAMIE STAFFORD, University of Houston, DEBORA MCOCZEK, JACQUELYN NORONHA-HOSTLER, University of Illinois at Urbana-Champaign, PAOLO PAROTTO, University of Wuppertal — We construct a family of equations of state for QCD in the temperature range 30$\leq$ T$\leq$800 MeV and in the chemical potential range 0$\leq$ μ_B $\leq$450 MeV. These equations of state match available lattice QCD results up to O(μ_Bˆ4)and in each of them we place a critical point in the 3D Ising model universality class. The position of this critical point can be chosen in the range of chemical potentials covered by the second Beam Energy Scan at RHIC. Our results for the pressure, entropy density, baryon density, energy density and speed of sound can be used as inputs in the hydrodynamical simulations of the fireball created in heavy ion collisions. We follow the approach presented in Ref. [1], but we extend it to a more realistic scenario for heavy-ion collisions, namely to a situation in which the strangeness and electric charge chemical potentials are non-zero, and they are functions of T and μ_B chosen such that the total strangeness in the system is zero, and the total electric charge is a fraction of the total baryon number. These choices reflect the net-strangeness and net-electric charge content of the colliding nuclei in the collision.

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