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Phase diagram and isentropic curves from the vector meson extended Polyakov quark meson model

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In the framework of the $N_f = 2 + 1$ flavor (axial)vector meson extended Polyakov quark meson model we investigate the QCD phase diagram at finite temperature and density. We use a χ^2 minimization procedure to parametrize the model based on tree-level decay widths and vacuum scalar and pseudoscalar curvature masses which incorporate also the contribution of the constituent quarks. Using a hybrid approximation (mesons at tree level, fermions at one-loop level) for the grand potential we determine the pressure and other thermo-dynamical observables derived from it together with the phase boundary. We also determine the location of the critical end point of the phase diagram on the $\mu_B - T$ and $\rho - T$ planes. Moreover we determine a set of isentropic curves in the crossover and in the first order region. We show that the curves behave very similarly as their counterparts obtained from the lattice in the crossover regime.

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