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Using Characteristic Temperatures of Transport Coefficients to Search for the QCD Critical Point[1] TRAVIS DORE, JACQUELYN NORONHA-HOSTLER, MATT SIEVERT, Rutgers University — While at at zero baryon chemical potentials one expects a minimum in the shear viscosity over entropy density and a maximum in the bulk viscosity to entropy density ratio, the exact values where these characteristic temperatures occur has not yet been determined from first principle Lattice QCD calculations and may occur anywhere within the cross-over regime of the phase transition. However, if there is a critical point in the QCD phase diagram then all characteristic temperatures should converge and, depending on the universality class, some of the hydrodynamic transport coefficients themselves may diverge. In order to explore out-of-equilibrium effects in the QCD phase diagram we use 1+0D (Bjorken flow) viscous hydrodynamics to study the hydrodynamical lifetime, cavitation, and attractor physics in a simple cross-over phase transition versus one with a critical point (where we expect all characteristic temperatures to converge). Comparisons between results obtained using an equation of state with nonzero baryon, strange, and electric charge chemical potentials and results obtained using the assumption of only a finite baryon chemical potential (i.e. $\mu_S = \mu_Q = 0$) are also made.

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