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Black Hole Formation during a Cosmological QCD Phase Transition[1] TODD SPRINGER, JOSEPH KAPUSTA, School of Physics and Astronomy, University of Minnesota, Minneapolis, MN 55455 — The formation of primordial black holes from density fluctuations is usually thought to be relatively rare due to the large over-density required to overcome pressure forces and cause a collapse. In recent years, work has been done to examine whether the effect of a quark-hadron phase transition could reduce the necessary over-density due to a softening of the equation of state. Previous analyses have focused on a first order phase transition using a bag model equation of state. Using a combination of semi-analytic and numerical approaches, we examine this issue for equations of state that exhibit a first order phase transition, a second order phase transition, or just a rapid crossover. We find there is an enhanced production of sub-solar mass black holes even if the transition is not first order.

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