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Spectral Medium Effects on Hadronic Densities RODOLFO GONZALEZ, University of Texas at El Paso, RALF RAPP, PAUL HOLHER, Texas A&M University — Quarks and leptons are the basic building blocks of the "visible" matter in the universe. Quarks are confined into hadrons but it may be possible to release them for a short moment by smashing two heavy ions together at ultra-relativistic speeds. The product from doing this collision is possibly a Quark-Gluon Plasma (QGP). The goal of my research is to find the hadronic density for three specific hadrons as temperature increases. The problem with the density model I began with is it assumes mass is fixed but we know mass can change in a medium depending on the momentum and energy of a particle. In order to correct for this we add a spectral function to our density equation that has a distribution for mass depending on its momentum, energy and vacuum width. The newly added spectral function for density was first implemented with a vacuum width, but then allowed to be changing as temperature increases by including an in-medium width. My results find that with this new spectral functions the densities increase faster than in the original fixed-mass equation; the effect is particularly pronounced for the small-mass pion, but less so for the heavier resonances.

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