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Shear Viscosities of Hadrons with K-Matrix Cross Sections ANTON WIRANATA, VOLKER KOCH, XINNIAN WANG, Lawrence Berkeley National Lab, MADAPPA PRAKASH, Ohio University, BERKELEY-ATHENS COLLABORATION — In this work we show how interactions play a key role in determining the magnitudes of shear viscosity. In order to include all resonances that are produced near the phase transition temperature, a better and consistent formalism for transport cross sections in a multi-component mixture is used. Thus far, two avenues have been pursued: (i) Parametrize phase shifts (where experimentally available) to obtain the differential cross sections, and (ii) Employ the Briet-Wigner parametrization of total cross sections as available in the Particle Data book. The first method fails to include all resonances of relevance (as data are not available), whereas the second method fails to preserve unitarity except in the case of well separated resonances. The K-Matrix parametrization of differential cross sections (necessary for both transport and equation of state calculations) overcomes both of these drawbacks, while preserving unitarity. The K-Matrix formalism also treats close-lying resonances in a consistent way by properly considering interference terms in the differential cross section. The interference terms are important in determining the magnitude of the cross section, because these terms could be negative; hence they will either reduce or increase the magnitudes of both viscosities.

Anton Wiranata
Lawrence Berkeley National Lab

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