Contribution ID: **303**                                                    Type: **Poster**

# Shear Viscosities of Hadronic Gases

*Thursday 16 August 2012 16:00 (2 hours)*

We present a detailed comparison between two different methods to calculate the shear viscosity coefficient for a set of four hadronic systems. One calculation employs the Chapman-Enskog method to calculate the shear viscosity coefficient for a hot hadronic system. The other calculation uses the Green-Kubo method to calculate the shear viscosity for a hadronic medium simulated using the Ultrarelativistic Quantum Molecular Dynamics (UrQMD) model. The calculations are performed over a temperature range of 60-200 MeV, and the differences in the values for the calculations are highlighted. The degrees of freedom and cross sections of the systems for the two calculations are synchronized to ensure the most accurate comparison possible. The systems studied include those of massive and massless pions with a fixed cross section, that of chiral pions with energy dependent cross section, and that of a gas of pions and rho resonanaces. The lifetime of the rho resonance is varied and the effect of the rho resonance lifetime on the shear viscosity is investigated.

**Author:**   Dr WIRANATA, Anton (Lawrence Berkeley National Laboratory)

**Co-authors:**   Prof. PRAKASH, Madappa (Ohio University);  Dr DEMIR, Nasser (Kuwait University);  Prof. BASS, Steffen A. (Duke University)

**Presenter:**   Dr DEMIR, Nasser (Kuwait University)

**Session Classification:**  Poster Session Reception

**Track Classification:**  Hadron thermodynamics and chemistry