# Normal Stress Ratios

These are from simple shear flow simulations done with Less-Edwards boundaries. Here x is the direction of flow, y is the direction of the velocity gradient, and z is the out of shear plane or vorticity direction. These cor

Generally (but with one exception), τ_{xx} is the largest value followed by τ_{yy} and τ_{zz}. The stress ratios τ_{yy}/τ_{xx} and τ_{zz}/τ_{xx} vary with concentration, ν, and material properties, the coefficient of restitution, ε and surface friction coefficient, μ. They are also weak functions of $k/\rho d^3\gamma^2$ but all this data was taken for $k/\rho d^3\gamma^2 = 10^5$.

Note that τ_{yy} and τ_{xx} agree with in about 10%.
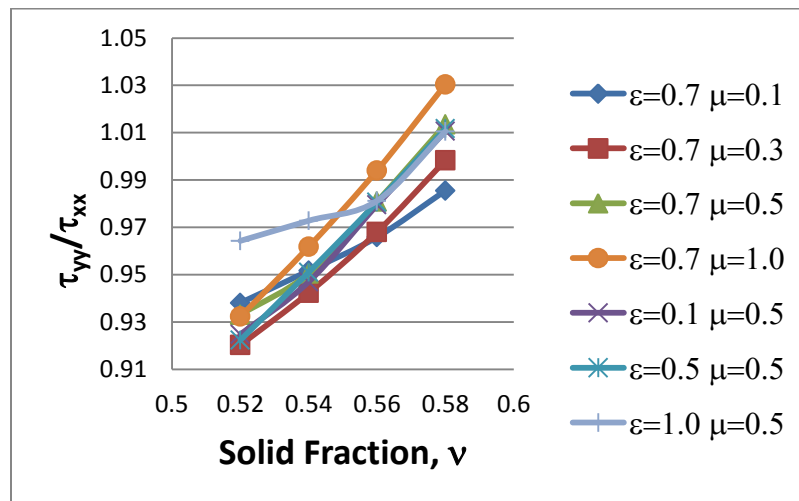
But τ_{zz} and τ_{xx} can differ by more than 20%.