1154-45-1543 **James M Scott*** (jscott66@vols.utk.edu) and **Tadele Mengesha**. *Asymptotic analysis of a coupled system of nonlocal equations with oscillatory coefficients.* Preliminary report.

In this paper we study the asymptotic behavior of solutions to strongly coupled systems of integral equations with oscillatory coefficients. The system of equations is motivated by the peridynamic model of the deformation of heterogeneous media that additionally accounts for short-range forces. We consider the vanishing nonlocality limit on the same length scale as the heterogeneity and show that the system's effective behavior is characterized by a coupled system of local equations that are elliptic in the sense of Legendre-Hadamard. This effective system is characterized by a fourth-order tensor that shares properties with Cauchy elasticity tensors that appear in the classical equilibrium equations for linearized elasticity. (Received September 16, 2019)