

1171-45-100

Tadele Mengesha* (mengesha@utk.edu) and **James Scott**. *Asymptotic analysis of a coupled system of nonlocal equations with oscillatory coefficients.*

In this talk I will discuss on the asymptotic behavior of solutions of a system of strongly coupled integral equations with oscillatory coefficients. The system of equations is motivated by a 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 partial differential 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. This is a joint work with James M. Scott. (Received August 09, 2021)