1145-35-850 **B Chase Russell*** (`bchaserussell@psu.edu`), 1 Prischak Building, Penn State, Erie–The Behrend College, Erie, PA 16563. *Quantitative homogenization with relatively soft inclusions.*

From filled resins in a dentist's office to fiberglass on an airplane wing, composite materials are used in a variety of ways. Unfortunately, complex microstructures make composite materials difficult to analyze; constituents generally vary at a fine scale ε and affect the global behavior of the material. In this talk, we discuss homogenization of systems of linear elasticity with rapidly oscillating periodic coefficients and Dirichlet boundary conditions in domains with periodically placed inclusions of size $\mathcal{O}(\varepsilon)$ and magnitude δ by establishing H^1-convergence rates. From these rates, interior estimates at the macroscopic scale may be derived directly without the use of compactness via a Campanato-type scheme presented by S. Armstrong and C.K. Smart and further developed for uniformly elliptic equations in by Armstrong and Z. Shen. (Received September 16, 2018)