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B Chase Russell* (brandon.russell1700@uky.edu). *Homogenization with soft inclusions and interior Lipschitz estimates at every scale.*

We establish interior Lipschitz estimates at every scale for solutions to systems of linear elasticity with rapidly oscillating periodic coefficients and Dirichlet boundary conditions in domains with periodically placed inclusions of size ε and magnitude δ by establishing H^1 -convergence rates for such solutions. The interior estimates at the macroscopic scale are derived directly without the use of compactness via an argument presented in [S.N. Armstrong, C.K. Smart. *Ann. Sci. Éc. Norm. Supér*, 49:423–481, 2016] that was adapted for elliptic equations in [S.N. Armstrong, Z. Shen. *Comm. Pure Appl. Math.*, 69:1882–1923, 2016] and [Z. Shen. *Anal. PDE*, 10:653–694, 2017]. The interior estimates at the microscopic scale rely on an argument with layer potentials. As a consequence, we obtain interior Lipschitz estimates for solutions to systems of linear elasticity with rapidly oscillating coefficients and mixed boundary conditions in domains periodically perforated. Hence, this talk should be considered as an extension of [R. *J. Diff. Eqs.*, 263:3396–3418, 2017]. (Received September 20, 2017)