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Screening of Strain Fields in Manganites[1] GIAN GUZMAN-VERRI, Materials Science Division, Argonne National Laboratory, RICHARD BRIERLEY, Department of Physics, Yale University, PETER LITTLEWOOD, Physical Sciences and Engineering, Argonne National Laboratory — It is well known that elastic couplings mediate long-range interactions between local degrees of freedom in colossal magnetoresistance manganites. Though the effects of elastic strain couplings on phase transitions have been extensively studied in the past [1], several important questions remain such as whether strain can induce inhomogeneous ordered states as those observed in manganites. In this talk, we address this question phenomenologically and propose that the observed scaling of the metal-to-insulator transition temperature on ionic radii in perovskite manganites [2] is the result of rotations of MnO_6 octahedra that screen the strain fields.

[1] D. J. Bergman and B. I. Halperin, Phys. Rev. B 13 2145 (1976).
[2] L. M. Rodriguez-Martinez and J. P. Attfield, Phys. Rev. B 54 R15622 (1996).

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