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**Violation of Onsager reciprocity in underdoped cuprates?** VICTOR YAKOVENKO, University of Maryland, CHANDRA VARMA, University of California at Riverside, AHARON KAPITULNIK, Stanford University — One of the canons of condensed matter physics is the Onsager reciprocity principle for systems in which the Hamiltonian commutes with the time-reversal operator. Recent results of measurements of the Nernst coefficient [1] in underdoped  $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$ , together with the measurements of the anisotropy of conductivity and the inferred anisotropy of the thermopower, imply that this principle is violated [2]. The probable violation and its temperature dependence are shown to be consistent with the loop-current phase which has been directly observed in other experiments. The violation is related directly to the magneto-electric symmetry of such a phase in which an applied electric field generates an effective magnetic field at right angle to it and to the order parameter vector, and vice versa.

[1] R. Daou *et al.*, Nature **463**, 519 (2010).

[2] C. M. Varma, V. M. Yakovenko, A. Kapitulnik, arXiv:1007.1215

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