

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Local magnetic susceptibility study of long-range order in $\text{Mn}_{12}\text{-ac}$ ¹ BO WEN, CCNY, P. SUBEDI, NYU, Y. YESHURUN, Bar-Ilan U., Israel, M.P. SARACHIK, CCNY, A.D. KENT, NYU, A.J. MILLIS, Columbia U., S. MUKHERJEE, G. CHRISTOU, U. of Florida — The magnetic susceptibility of single crystals of $\text{Mn}_{12}\text{-ac}$ obeys a Curie-Weiss law, indicating a transition to a ferromagnetic phase below 1 K [1]. Measurements by Hall magnetometry have yielded different temperature intercepts ranging from 0.4 K to 0.9 K. Moreover, these values differ from those obtained for the same crystals in a SQUID-based MPMS. We have proposed two possible origins: (1) the effect of crystal's aspect ratio, reported in [2]; (2) the possibility that the local ordering temperature differs from the global average value. Here we report an ongoing study of the longitudinal magnetic susceptibility at different locations of a single crystal, performed on a Hall sensor array in both zero and finite transverse magnetic field. Preliminary results yield temperature intercepts that are lower near the end of the crystal than in the middle.

[1] Bo WEN et al., PRB 82, 014406 (2010).

[2] Shiqi LI et al., PRB 82, 174405 (2010).

¹Funded by NSF-DMR-0506946, ARO W911NF-08-1-0364, NSF-DMR-0705847, NSF-DMR-0451605, NSF-CHE-0910472 and Deutsche Forschungsgemeinschaft

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Date submitted: 07 Dec 2010

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