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Evidence for Geometric-Phase Interference in a Mn_{12}-Acetate Single-Molecule Magnet[1] CHANGYUN YOO, JONATHAN FRIEDMAN, Amherst College, ADELINE FOURNET, GEORGE CHRISTOU, University of Florida, YURI MYAESOEDOV, ELI ZELDOV, The Weizmann Institute of Science
— Recent work by our group has shown evidence for geometric-phase interference between tunneling paths in the Mn_{12} ^{t}BuAc single-molecule magnet, the first observation of this effect in a system that has true four-fold rotational symmetry [1]. This effect was not previously observed in the bellwether Mn_{12}Acetate molecule, presumably because of solvent disorder inherent to the crystal. Here we report measurements on a crystal of Mn_{12}Acetate $\cdot$ MeOH, which crystallizes without solvent disorder and therefore preserves the molecule's four-fold symmetry. The relaxation rate Γ as a function of transverse field H_T exhibits structure indicative of interference between tunneling paths similar to that found in [1]. This suggests that the solvent disorder, and not the larger dipole interactions found in Mn_{12}Acetate, is the most important factor in suppressing the interference effect.
[1] S. T. Adams et al., Phys. Rev. Lett., **110**, 087205 (2013).

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