Abstract Submitted
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Time-resolved Measurements of Spontaneous Magnetic Deflagration of Mn_{12}tBuAc[1] YIZHANG CHEN, A. D. KENT, New York Univ NYU, QING ZHANG, M. P. SARACHIK, City College of New York CUNY, M. L. BAKER, City College of New York CUNY and New York University NYU, D. A. GARANIN, Lehman College of CUNY, NAJAH MHESN, CHRISTOS LAMPROPOULOS, University of North Florida — Magnetic deflagration in molecular magnets has been triggered by heat pulses [1,2] and acoustic waves [3,4]. In this work we report spontaneous magnetic deflagration (i.e. deflagration that occurs without an external trigger) in the axially symmetric single molecule magnet Mn_{12}tBuAc. Magnetic hysteresis measurements show steps due to resonant quantum tunneling (RQT) below 1K, confirming the spin-Hamiltonian parameters for this material and previous results. Deflagration speeds measured with a newly constructed higher bandwidth (2MHz) setup will be presented as a function of transverse and longitudinal fields $H_x \otimes H_z$ both on and off resonance. A large increase in front velocity near RQT steps is observed in experiments with swept transverse fields and will be discussed in light of models of deflagration.
[1] S. McHugh *et al.* PRB **76**, 172410 (2007); [2] P. Subedi *et al.*, PRL **110**, 207203 (2013). [3] A. Hernández-Mínguez *et al.*, PRL **95**, 217205 (2005).

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