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The Possibility of Quantum Deflagration in the Fe8 Nano-Magnet TOM LEVIANT, Technion, ELI ZELDOV, YURI MYASOEDOV, Weizmann Institute of Science, AMIT KEREN, Technion — We report spatially resolved, time-dependent, magnetization reversal measurements of Fe8 single crystals using a microscopic Hall bar array. We found that in some samples the molecules reverse their spin direction at the resonance field in the form of deflagration. The deflagration front velocity is on the order of 1 m/sec and sensitive to field gradients and sweep rates. We discuss the possibility that this slow deflagration can be explained by flipping rates determined by the tunnel splitting only, with no over-the-barrier motion.

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