Abstract Submitted
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**High field on-chip SQUID measurement of spin quantum tunneling**[1] LEI CHEN, Department of Physics & NHMFL, Florida State University, WOLFGANG WERNSDORFER, Institut Néel, CNRS, 38042 Grenoble, France, IRINEL CHIORESCU, Department of Physics & NHMFL, Florida State University — Experiments involving quantum spins [1] show that localized spins are candidates for implementation of quantum algorithms, but sensitive on-chip spin detection needs to be developed. In our setup at NHMFL, we placed a small magnetic sample in the vicinity of an on-chip Nb SQUID, and applied a magnetic field precisely parallel to SQUID plane. With SQUIDs only few nm thick, we can perform measurements in fields as high as 7 T, which is desirable to study a larger family of molecular magnets or diluted spin system. Landau-Zener quantum tunneling [2] in swept magnetic field reveals spin Hamiltonian information, like the anisotropy-induced tunneling gaps and entanglement of spin states. Successful SQUID measurements of the quantum tunneling of spins, in the presence of fields up to 5.5T, will be presented. 1. S. Bertaina *et al*, Nature **453**, 203 (2008); S. Nellutla *et al*, PRL. **99**, 137601 (2007); S. Bertaina *et al*, PRL **102**, 050501 (2009) 2. W. Wernsdorfer *et al*, EPL **5**, 552 (2000); L. Chen *et al*, EPL **87,** 57010 (2009)

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