Abstract Submitted
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Long lived excitations in fully compensated antiferromagnetic nanomagnets[1] JACOB BURGESS, University of Manitoba, Max Planck Institute for the Structure and Dynamics of Matter, and Max Planck Institute for Solid State Research, LUIGI MALAVOLTI, STEFFEN ROLF-PISSARCZYK, GREGORY MCMURTRIE, SHICHAO YAN, SEBASTIAN LOTH, Max Planck Institute for the Structure and Dynamics of Matter and Max Planck Institute for Solid State Research — Extensive interest is directed towards finding long lived states in atomic scale magnetic structures. Applications include classical and quantum spintronics schemes. Here we use a recently described method of applying a single atom exchange bias, using a magnetic scanning tunneling microscope tip [1], to control the quantum states of fully compensated nano-antiferromagnetic atomic chains. We apply time-resolved spin-polarized scanning tunneling microscopy to measure the energy relaxation of the chains as a function of the tip interaction strength. With strong coupling to the microscope tip, the excited state lifetimes can extend to the millisecond scale. [1] Nature Nanotech. 10, 40 (2015).

[1]Center for Free Electron Laser Science, Max Planck Society, Deutsches Elektronen-Synchrotron, Alexander von Humboldt Foundation, Natural Sciences and Engineering Research Council of Canada

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