

Abstract Submitted
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Theory of single nuclear spin detection in magnetic resonance force microscopy SRINIVASA CHEMUDUPATI, VLADIMIR TSIFRINOVICH, Polytechnic Institute of NYU — We develop a theory for the measurement of a nuclear spin state in a paramagnetic atom with Oscillating Cantilever-Driven Adiabatic Reversals (OSCAR) in Magnetic Resonance Force Microscopy (MRFM). In this theory, we use a semi-classical approach where the electron-nuclear spin system, with hyperfine interaction, is treated quantum mechanically and the motion of the ferromagnetic particle on the cantilever tip is treated classically. Our computations support the idea of the measurement of a nuclear spin state by detection of a single electron spin.

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