

Abstract Submitted  
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**Universal mechanism for electron paramagnetic resonance of individual adatoms**<sup>1</sup> JOSE LADO, QuantaLab, International Iberian Nanotechnology Laboratory (INL), Portugal, ALEJANDRO FERRON, Instituto de Modelado e Innovacion Tecnologica (CONICET-UNNE) and Facultad de Ciencias Exactas, Naturales y Agrimensura, Universidad Nacional de, JOAQUIN FERNANDEZ-ROSSIER, QuantaLab, International Iberian Nanotechnology Laboratory (INL), Portugal — We propose a new universal mechanism that makes it possible to drive an individual atomic spin using a spin polarized scanning tunnel microscope (STM) with an oscillating electric signal. We show that the combination of the distance dependent exchange with the magnetic tip and the electrically driven mechanical oscillation of the surface spins permits to control their quantum state. Based on a combination of density functional theory and multiplet calculations, we show that the proposed mechanism is essential to account for the recently observed electrically driven paramagnetic spin resonance (ESR) of an individual Fe atom on a MgO/Ag(100) surface. Our findings set the foundation to deploy the ESR-STM quantum sensing technique to a much broader class of systems.

<sup>1</sup>SPINOGRAPH

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