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**Cotunneling theory for STM spin-flip spectroscopy** F. DELGADO, J. FERNANDEZ-ROSSIER, Departamento de Fisica Aplicada, Universidad de Alicante, San Vicente del Raspeig, 03690 Spain — Scanning Tunneling Spectroscopy of both magnetic atoms and molecules adsorbed on surfaces is analyzed from the theoretical point of view. We show that cotunneling is the leading mechanism that explains the spin assisted inelastic conductance reported in recent experiments [1-4]. We describe the electronic transport between the scanning tip and the conducting surface through the magnetic system (MS) with a generalized Anderson model. The correlations in the MS are calculated exactly and transport is considered to fourth order in the tip-MS and MS-surface coupling. Our theory accounts for the observed [2,4] asymmetric conductance and provides an explanation of the large inelastic contribution.

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