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Spin-dependent electronic transport through magnetic molecules[1] CARSTEN TIMM, University of Kansas, FLORIAN ELSTE, Freie Universitaet Berlin — Electronic transport through magnetic molecules has recently received considerable attention. This is partly motivated by the idea to integrate spintronics with molecular electronics. This talk highlights a number of interesting effects we predict for tunneling through single magnetic molecules and molecular monolayers weakly coupled to metallic leads. The results are obtained in a rate-equation approach which treats the intra-molecular interactions exactly and works also for situations far from equilibrium (large bias voltage). Effects to be discussed include fingerprints of magnetic excitations seen in inelastic tunneling beyond the sequential-tunneling approximation, very slow spin relaxation, giant spin amplification, and negative differential conductance at high temperatures.

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