Abstract Submitted
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Noise spectroscopy of magnetic tunnel junctions with organic barriers[1] FARKHAD ALIEV, JUAN PEDRO CASCALES, Departamento de Física Materia Condensada, Universidad Autonoma de Madrid, Spain, JHEN-YONG HONG, Department of Physics, National Taiwan University, Tawan, MINN-TSONG LIN, Department of Physics, National Taiwan University and Institute of Atomic and Molecular Sciences, Academia Sinica, Taiwan — Understanding the details of spin and charge transport through organic barriers remains one of the main challenges in organic spintronics. Here we present low frequency noise studies in magnetic tunnel junctions with thin (2-5nm) organic PTCDA barriers in the tunnelling regime, investigated at temperatures of under 1K up to 300K. Shot noise measurements show a superpoissonian contribution at low biases giving rise to a Fano factor of around 1.5-2. We tentatively link the enhanced shot noise with electron bunching induced by inelastic interaction with collective low frequency vibration modes of the molecules. On the other hand, the bias dependence of 1/f noise studied up to 350mV reveals reproducible anomalies which could be linked with excitations induced by inelastic tunnelling, due to individual vibrational modes of higher frequency of the PTCDA molecules. The dependence of the shot and 1/f noise with the magnetic alignment of the electrodes will also be discussed

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Farkhad Aliev
Departamento de Física Materia Condensada,
Universidad Autonoma de Madrid, Spain

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