

## **Magnetoresistance measured with spatial nanometer resolution: The resistance of a nanoconstriction**

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In this work we describe a new method to measure magnetoresistance (MR) with nanometer resolution. The MR of an object is the result of incremental and decremental of resistance when a magnetic field is applied to a system with respect to the case of zero field. In each site of the sample the variation of resistance can be positive or negative. This implies that the MR measure between two points of system can vary with respect to other two. We present a novel method by using Electrostatic Field Microscopy (EFM) that has nanometer size resolution to determine MR with nanometer size resolution. We use this method to measure the magnetoresistance of a nanoconstriction, that is to say the variation of resistance with and without magnetic field taking place just at the constriction or nanocontact between two magnetic thin films. It is seen that this value is largely enhanced with regards to the bulk MR.