

## Giant non-contact friction observed on NbSe<sub>2</sub> measured with pendulum AFM

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The mechanism of friction and accompanied energy dissipation is a widely studied field. Sophisticated techniques, like atomic force microscopy (AFM), made it possible to get insight into the energy dissipation mechanism on the atomic scale. In addition, we got also the insight into the dissipation mechanism in the non contact regime [1]. Here, we present an example of giant non-contact friction measured below the charge density wave (CDW) phase transition of NbSe<sub>2</sub>. Measurements were mainly carried out by means of an Atomic Force Microscope (AFM) in pendulum geometry. In this cantilever alignment one has extremely good force sensitivity of 10aN/ $\sqrt{\text{Hz}}$  and very high dissipation resolution of  $1.7 \cdot 10^{-12} \text{Kg/s}$ . Giant non-contact friction maxima was also confirmed with a tuning fork AFM. All shown measurements were carried out in Ultra-High Vacuum and low temperatures of 6K.

[1] M. Kisiel, E. Gnecco, U. Gysin, L.Marot, E. Meyer, *Nature Materials* **10**, 199 (2011).