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Nanosecond scanning tunneling microscopy ANDREAS HEINRICH, IBM Research, SEBASTIAN LOTH, MARKUS ETZKORN, DONALD EIGLER, CHRISTOPHER LUTZ — Scanning tunneling microscopy is a powerful tool primarily because of the very high spatial resolution. In addition, the spectroscopic imaging modes have significantly enhanced the capabilities of the technique. However the time resolution of this technique has to date been governed by the slow response of the current to voltage converter used to measure the tunnelling current. Here we present a novel approach for achieving high time resolution with a DC current measurement. We show that this technique can be applied to a large number of different physical systems. We will focus on its use for the real-time measurement of spin relaxation of single atoms on surfaces.

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