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MRFM and non-contact friction experiments under UHV conditions S. RAST, U. GYSIN, P. RUFF, C. WEHRLE, H.-R. HIDBER, E. MEYER, University of Basel, P. VETTIGER, M. DESPONT, C. GERBER, IBM Research Division Zurich, D.W. LEE, Chonnam National University, UNIVERSITY OF BASEL, KLINGELBERGSTRASSE 82, CH-4056 BASEL, SWITZERLAND TEAM, IBM RESEARCH DIVISION ZURICH, RESEARCH LABORATORY, CH-8803 RUSCHLIKON, SWITZERLAND TEAM, CHONNAM NATIONAL UNIVERSITY TEAM — In this contribution we present magnetic resonance force microscopy (MRFM) experiments and non-contact friction force experiments made on γ -irradiated quartz samples under UHV conditions and low temperatures. Ultra-sensitive cantilevers with integrated magnetic tips allow us to detect forces in the order of $10^{-18}\text{N}/\sqrt{\text{Hz}}$ [1]. The measurements showed that the sensitivity did not change significantly in a homogenous magnetic field. In quartz samples long-range, non contact friction forces are observed. A spin-lifetime of 137 ms was measured by cyclic inversion of the spins. The measurement was achieved with an ultrasensitive PLL using the OSCAR protocol. [1] Gysin et al., Phys. Rev. B **69**, 045403 (2004)

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