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Advances in SQUID-detected magnetic resonance force microscopy

Wit, M. de

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Author: Wit, M. de

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CURRICULUM VITAE

Martin de Wit

Born on 19 January 1991 in Katwijk aan Zee (the Netherlands)

Education

2003 - 2009 HIGH SCHOOL,
Het Rijnlands Lyceum, Oegstgeest.

2009 - 2012 BSc. IN PHYSICS,
Leiden University, Leiden.

Final Project: The Lead Zeppelin Project: Development and testing of a force sensor, intended for MRFM, using magnetic levitation. (Supervision by Prof. dr. ir. T. H. Oosterkamp).

2012 - 2014 MSc. IN EXPERIMENTAL PHYSICS,
Leiden University, Leiden.

Project 1: On slippery ground: The search for superlubricity in macroscopic samples and the exploration of graphene as a friction lowering coating. (Supervision by Prof. dr. J.W.M. Frenken).

Project 2: Bismuth as topological insulator: Obtaining experimental evidence of the Quantum Spin Hall State in a bilayer of bismuth. (Supervision by Prof. dr. ir. S.J. van der Molen and Prof. dr. J.M. van Ruitenbeek).

2014 - 2019 PhD RESEARCH IN PHYSICS,
Leiden University, Leiden.

LIST OF PUBLICATIONS

PEER-REVIEWED PUBLICATIONS

- **M. de Wit**, G. Welker, J.J.T. Wagenaar, F.G. Hoekstra, & T.H. Oosterkamp. Feasibility of Imaging in Nuclear Magnetic Resonance Force Microscopy using Boltzmann polarization. *Journal of Applied Physics* **125**, 083901 (2019).
- **M. de Wit***, G. Welker*, K. Heeck, F.M. Buters, H.J. Eerkens, G. Koning, H. van der Meer, D. Bouwmeester, & T.H. Oosterkamp. Vibration isolation with high thermal conductance for a cryogen-free dilution refrigerator. *Review of Scientific Instruments* **90**, 015112 (2019).
- **M. de Wit**, G. Welker, F.G. Hoekstra, & T.H. Oosterkamp. Flux compensation for SQUID-detected Magnetic Resonance Force Microscopy. *Cryogenics* **98**, 67-70 (2019).
- **M. de Wit***, G. Welker*, J.M. de Voogd, & T.H. Oosterkamp. Density and T_1 of Surface and Bulk Spins in Diamond in High Magnetic Field Gradients. *Physical Review Applied* **10**, 064045 (2018).
- J.J.T. Wagenaar, A.M.J. den Haan, R.J. Donkersloot, F. Marsman, **M. de Wit**, L. Bossoni, & T.H. Oosterkamp. Mechanical Generation of Radio-Frequency Fields in Nuclear-Magnetic-Resonance Force Microscopy. *Physical Review Applied* **7**, 024019 (2017).
- J.J.T. Wagenaar, A.M.J. den Haan, J.M. de Voogd, L. Bossoni, T.A. de Jong, **M. de Wit**, K.M. Bastiaans, D.J. Thoen, A. Endo, T.M. Klapwijk, J. Zaanen, & T.H. Oosterkamp. Probing the Nuclear Spin-Lattice Relaxation Time at the Nanoscale. *Physical Review Applied* **6**, 014007 (2016).

* These authors contributed equally.

MISCELLANEOUS

- T.H. Oosterkamp, M. Beker, E. Hooijkamp, **M. de Wit**, G. Welker, D. van der Zalm, & G. Akkermans. Good Vibrations near Absolute Zero. *Mikroniek* **6**, 48-51 (2016).

IN PREPARATION

- G. Welker*, **M. de Wit***, T. Benschop, L. Bossoni, J. Mydosh, T. Prokscha, & T.H. Oosterkamp. Dilute spin densities on iron-doped palladium probed with Muon Spin Rotation, SQUID magnetometry and ultrasensitive Magnetic Force Microscopy. *In preparation*.

* These authors contributed equally.

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One of the more complicated aspects of working in a niche group like ours is that you have to be a jack of all trades. And as the saying goes, this means you are a master of none. For this reason, I've relied on a great number of people to help me, in a large variety of different fields.

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