Development and testing of the gravitational wave antenna MiniGRAIL in its full-featured configuration

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List of Publications

1. A. Vinante, G. Wijts, L. Schinkelshoek, O. Usenko, T. Oosterkamp, "Magnetic Resonance Force Microscopy of paramagnetic electron spins at millikelvintemperatures", *Nat. Commun.*, vol. 2, p. 572, 2011.

2. O. Usenko, A. Vinante, G. Wijts, T.H. Oosterkamp, "A superconducting quantum interference device based read-out of a subattonewton force sensor operating at millikelvin temperatures", *Appl. Phys. Lett.*, vol. 98, p. 133105, 2011.

3. J. Pleikies, O. Usenko, R. Stolz, L. Fritzsch, G. Frossati, J. Flokstra, "Hot-electron effect in PdAu thin-film resistors with attached cooling fins", *Supercond. Sci. Technol.*, vol. 22, p. 114007, 2009.

4. J. Pleikies, O. Usenko, G. Frossati, J. Flokstra, "SQUID current amplifiers for sub-kelvin operation temperatures", *Cryogenics*, vol. 49, pp. 669-671, 2009.

5. J. Pleikies, O. Usenko, G. Frossati, J. Flokstra, "Optimization of a Low-Tc DC SQUID Amplifier With Tightly Coupled Input Coils", *IEEE Trans. Appl. Supercond.*, vol. 19, pp. 199-205, 2009.

6. J. Pleikies, O. Usenko, J. Flokstra, "Numerical studies on dc-SQUID sensors with tightly coupled input coil", *J. Phys.: Conf. Ser.*, vol. 97, p. 012254, 2008.

7. J. Pleikies, O. Usenko, KH Kuit, J. Flokstra, A. De Waard, G. Frossati, "SQUID developments for the gravitational wave antenna MiniGRAIL", *IEEE Trans. Appl. Supercond.*, vol. 17, pp. 764-767, 2007.

8. L. Gottardi, A. De Waard, O. Usenko, G. Frossati, M. Podt, J. Flokstra, M. Bassan, V. Fafone, Y. Minenkov, A. Rocchi, "Sensitivity of the spherical gravitational wave detector MiniGRAIL operating at 5 K", *Phys. Rev. D*, vol. 76, p. 102005, 2007.

9. A. De Waard, M. Bassan, Y. Benzaim, V. Fafone, J. Flokstra, G. Frossati, L. Gottardi, CT Herbschleb, A. Karbalai-Sadegh, K. Kuit, others, "Preparing for science run 1 of MiniGRAIL", *Class. Quantum Grav.*, vol. 23, pp. S79-S84, 2006.

10. R. Ackermann, Y. Benzaim, G. Frossati, L. Gottardi, A. Karbalai-Sadegh, W. Reincke, A. Shumack, O. Usenko, A. de Waard, J. Flokstra, M. Podt, M. Bassan, E. Coccia, V. Fafone, Y. Minenkov, A. Moleti, G. V. Pallottino, A. Rocchi, M. Visco, "Present Status of MiniGRAIL", *Proceedings of the 10th Marcel Grossmann Meeting on General Relativity*, pp. 1149-1168, 2005.

Curriculum Vitae

Oleksandr Usenko was born is Kharkiv, Ukraine (former Soviet Union) in 1980. After attending the Lyceum of Physics and Mathematics #27 from 1992 to 1997, he studied Physics at the Department of Physics and Technology of the National Technical University "Kharkiv Polytechnic Institute". He did his bachelor research project under the supervision of dr. N. Diakonenko entitled "Study of amorphous films of complex chalcogenide compounds". After that he did a master research internship in the Department of Thermal Properties of Molecular Crystals at the Institute for Low Temperature Physics and Engineering, under supervision of dr. B. Gorodilov. The title of his graduation thesis was: Phonon-rotational interaction in solid argon with nitrogen admixture. On July 1^{st}, 2003 he graduated "cum laude" in physics with specialization in material science.

From September 2003 to September 2004 he worked on the development of a data acquisition system for gravitational wave detector MiniGRAIL at the Kammerlingh Onnes Laboratory of Leiden University, The Netherlands, in the group of Prof. Giorgio Frossati.

In September 2004 he started his PhD project in the Kamerlingh Onnes Laboratory of Leiden University, The Netherlands, under supervision of Prof. Giorgio Frossati. The work concerned the development of a low-noise SQUID-based multichannel acquisition system that would allow full-featured operation of MiniGRAIL. He also participated in the development of the SQUID detection of the displacement of a nanomechanical resonator used for a magnetic resonance force microscopy experiment under supervision of Prof. Tjerk Oosterkamp.