CURRICULUM VITAE

Valeriy Yu. LYAKHNO

Department of Superconductive and Mesoscopic Structures
B.Verkin Institute for Low Temperature Physics and Engineering of the National Academy of Sciences of Ukraine (ILTPE)

Mailing Address**:** Prospekt Nauky, 47,
Kharkov, 61103, Ukraine
Phone: +38-057-3410907 (office)
Fax: +38-057-3403370
E-mail: lyakhno@ilt.kharkov.ua v.lyakhno@yahoo.com
https://scholar.google.com.ua/citations?user=m_D9Xk8AAAAJ&hl=ru#

PERSONAL:

Date of birth:	December 3, 1971
Place of birth:	Kharkov, Ukraine
Citizenship:	Ukraine
Marital status:	married, one daughter
Home Address:	Dacha 55 Str., B.11, Apt. 36, Kharkov, 61117, Ukraine
Mobile Phone:	+38-050-1963073

SUMMARY: Putting much effort in technical realization and in design of specific cryogenic components of experimental setup for quantum measurements of phase qubits as microwave single photon detective system. Proficient with super-low-noise measurements based on SQUID- detectors by magnetically shielding equipment and implementation of stochastic resonance technique in SQUID applications. Designing & developing of high efficiency FRP Dewar for biomagnetic measurement, especially for multichannel SQUID-based cardio scanner and magneto encephalograph. Strong experience in fabricating of nanoscale structures by means of thin film deposition techniques, preparation and investigation hereof. Hands-on experience in developing of superconductive detectors based on Josephson junctions and structures for IR wavelength system. Have technical skills in spectroscopy software application methods and numerical mathematical toolbox modeling packages, strength and thermal conductivity computations, familiar with basics of producing technical documentation and drawings.

PROFESSIONAL EXPERIENCE:

From 01.2022 Senior Researcher, Department of Superconductive and Mesoscopic Structures, B. Verkin Institute for Low Temperature Physics and Engineering of National Academy of Science of Ukraine;

2015-2021 Researcher, Department of Superconductive and Mesoscopic Structures, B. Verkin Institute for Low Temperature Physics and Engineering of National Academy of Science of Ukraine;

2002-2015 Senior Engineer, Department of Superconductive and Mesoscopic Structures, B. Verkin Institute for Low Temperature Physics and Engineering of National Academy of Science of Ukraine;

2000-2002 Researcher, Department of Spacecraft Power Units, Zhukovsky National Aerospace "Kharkov Aviation Institute" University;

1997-2000 Post-graduate Student, Department of Spacecraft Power Units, State Aerospace "Kharkov Aviation Institute" University;

1995-1997 Junior Researcher, Department of Spacecraft Power Units, State Aerospace "KhAI" University;

DEGREES:

2013 Candidate of Engineering Sciences, Ph.D thesis - "FRP Dewars for High-Resolution SQUID Magnetometers";

1995 M.S. State Diploma in Mechanic - Engineer, Kharkov Aviation Institute named after N.E. Zhukovsky (specialty: Engines and Energy-power Units of Spacecraft Vehicles);

AWARDS, GRANTS, MEMBERSHIPS:

2020 Grant of NATO Science for Peace and Security Program, multi-year project #G5796 "Single Microwave Photon Counter based on Tunable Flux Qubit";

2019 Grant for participating at Summer School of Low Temperature Physics and Techniques – "Cryocourse 2019 Workshop" organized by Centre of Low Temperature Physics, Institute of Experimental Physics of Slovak Academy of Science provided by European Microkelvin Platform within the framework H2020;

2011-2013 Project-manager for developing and fabrication of Super-low-noise Helium FRP Dewar with high efficiency in collaboration dealing with National Governmental Innovation Program "Creation of 9-Channel Magnetic Cardio Scanner";

2004-2006 INTAS Research Project #03-51-4145 "Superconducting Hot Electron Single-photon Counter for Terahertz Radioastronomy";

2000-2002 Grant of Science & Technology Center in Ukraine, project # GO-14 #Gr-14j "Creation of ecologically pure drying plants and development of power-saving technologies for agricultural production processing and preservation"**;**

2000 Grant of U.S. Civilian Research & Development Foundation (CRDF) Cooperative Grants Program, project # UP2-301 "Improvement of the High-temperature Superconductors Technology by the Disarmament Conversion of Plasma Guns";

1997-1999 Grant of Science & Technology Center in Ukraine, project # 447 "Grain-Crops Microwave Protection at Agricultural Enterprises of Ukraine".

SELECTED PUBLICATIONS:

- **Hybrid shield for microwave single-photon counter based on a flux qubit. /** V.Yu. Lyakhno, O.G.Turutanov, A.P. Boichenko, A.P. Shapovalov, A. A. Kalenyuk, V. I. Shnyrkov // Fiz. Nizk. Temp. 48(3), (2022) (in press).
- **Method of Measurements of Relative Permittivity and Dielectric Loss Tangent of Micropowders in a Wide Frequency Range** / A.O. Dumik, A.A. Kalenyuk, V.O. Moskaliuk, A.P. Shapovalov, S.I. Futimsky, O.G. Turutanov, V.Yu. Lyakhno // J. Nano- Electron. Phys. 14, 02006 (2022)
- **Cooled ferromagnetic shield as a part of hybrid system for isolation of superconducting flux qubit from electromagnetic environment. /** O.G. Turutanov, V.Yu. Lyakhno, A.P. Boichenko, A.P. Shapovalov, A.A. Kalenyuk, I.A. Martynenko // The Journal of V.N. Karazin Kharkiv National University, series"Physics" 35, 30 (2021).
- **Flux Qubit Spectrum Modelling to Build a Single Photon Counter.** / A.P. Boichenko, O.G. Turutanov, V.Yu. Lyakhno, A.A. Soroka, V.I. Shnyrkov. // 2021 IEEE 11th International Conference "Nanomaterials: Applications & Properties" (IEEE NAP – 2021) September 5–11, 2021, Odesa, Ukraine.
- **Small capacitance self-shunted MoRe–Si(W)–MoRe junctions for SQUIDs applications** / A.P. Shapovalov, V. E. Shaternik, O. Yu. Suvorov, A. A. Kalenyuk, V. Yu. Lyakhno, U. Yilmaz, P. Febvre, V. I. Shnyrkov // Applied Nanoscience, 2020, p. 1-6.
- **Controlled stochastic amplification of a weak signal in a superconducting quantum interferometer** / O.G. Turutanov, V.Yu. Lyakhno, M.E. Pivovar, V.I. Shnyrkov // Low Temperature Physics 45 (1), 2019, 60-66.
- **Frequency-tuned microwave photon counter based on a superconductive quantum interferometer** / O.G. Turutanov, V.I. Shnyrkov, W. Yangcao, A.A. Soroka, V.Yu. Lyakhno // AIP Publishing, Low Temperature Physics, 44(3), 2018, 212-220.
- **Isolation of a Josephson Qubit from electromagnetic environment /** V.I. Shnyrkov, A.M. Korolev,

O.G. Turutanov, V.M. Shulga, V.Yu. Lyakhno, and V.V. Serebrovsky // Low Temperature Physics, 2015, vol 41, N11, pp.1109-1118.

- **Stochastic resonance in RF SQUID with shunted ScS junction** / O. G. Turutanov, V.Yu. Lyakhno, V.A. Golovanevskiy, V. I. Shnyrkov // Physica A, 2014, Vol. 396, p. 1-8.
- V.Yu. Lyakhno, V.I. Shnyrkov, N.N. Budnik **Dewar-Shield for Magnetic Susceptibility Measurements in High Magnetic Fields,** Patent №58271 of Ukraine, MPK F17C 3/00 F17C 13/00 G01R 33/16 G01R 33/035 G01N 27/72. Declar. 01.09.2010; Publ. 11.04.2011, Bul. №7.
- **SQUID Magnetometer for Structuroscopy of Structural Materials** / A.V.Fedorchenko, V.Yu. Lyakhno, V.I. Shnyrkov // Problems of Atomic Science and Technology. 2010, №1(65), p.150-156
- **FRP Dewar for Measurements in High Pulsed Magnetic Fields** / V.Yu. Lyakhno, A.V.Fedorchenko, O.B. Kivirenko, V.I. Shnyrkov // Cryogenics, 2009, 49, pp.425-428.
- **Parameters Optimization of the FRP Dewar Intended for Biomagnetic Investigations** / V. Yu. Lyakhno, A. S. Garbuz, L. V. Gnezdilova, A. V. Lopin, and V. I. Shnyrkov // Instruments and Experimental Techniques, 2009, vol. 52, No. 5, pp. 752–757.
- **Deposition and Characterization of Few-nanometers-thick Superconducting Mo-Re Films /** Seleznev V. A., Gol`tsman G. N., Lyakhno V. Yu. et al // Superconductor Science and Technology, 2008, Vol 21 , N 11, 115006.
- **FRP Dewar for Magnetic Microscope Based on HTSC SQUIDs /** V.Yu. Lyakhno, S.I. Melnik, Yu.V. Fomenko, V.I. Shnyrkov // Radiotehnica, Kharkov, KNURE, 2007, №150, c.159-166.
- **In-Depth Profiling X-RAY Photoelectron Spectroscopy Study of NbN and MoRe Ultra-Thin Films /** V. Lyakhno, A. Garbuz, M. Mihailov, et al // Proc. of Materials Science & Technology 2006 Conference, symposium “Nanomaterials: Science and Technology”, Cincinnati, USA, October 2006.
- **The Investigation of Low Temperature Vacuum Drying Processes of Agricultural Materials /** L.A. Bazyma, A.V. Basteev, V.P. Guskov, A.M. Lyashenko, V.Yu. Lyakhno, V.A. Kutovoy // Journal of Food Engineering, 2006, Vol 74, Issue 3, pp 410-415.