Dr. Denis Vasyukov

Physics Department
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Personal

Born on August 03, 1977

Russian Citizen

Spoken languages: English and Russian

Education

Ph.D. Physics, University of Exeter, United Kingdom, 2009.

M.Sc. Technical Physics, St. Petersburg State Polytechnical University, Russia 2001.

B.Sc. Physics, St. Petersburg State Polytechnical University, Russia 1999.

Employment

University of Basel, Switzerland 2014–present (Post-doc Researcher)

National University of Singapore, Singapore 2013–2014 (Research Fellow)

Weizmann Institute of Science, Israel 2009–2013. (Post-doc Researcher)

University of Exeter, United Kingdom 2005–2009. (Ph.D. Student)

Epi-center Ltd., St.Petersburg, Russia 2004–2005. (Engineer)

Friedrich-Alexander Universität Erlangen-Nürnberg, Germany 2002–2004. (Guest Researcher)

Ioffe Physico-Technical Institute, St.Petersburg, Russia 1998–2001. (Junior Researcher)

Professional skills

Equipment developed/manufactured

Developed and manufactured a scanning nanoSQUID microscope working at ^{4}He tempteratures and a low-temperature nanowire-based atomic force microscope, UHV e-gun evaporation system, two LHe-cooled thermal evaporation systems, 3-axis positioner for ^{4}He optical cryostat, etc.

Equipment used

Low temperature scanning probe microscopes, scanning SQUID microscope, nano-fabrication (e-beam and photolithography), evaporators (thermal and e-gun, including UHV and cryo-cooled evaporators), magnetron sputtering and plasma assisted deposition systems, Ar-ion, DC and RF plasma and RIE etching machines, bonding machines, x-ray diffractometers (double crystal and powder diffraction), lasers (CO2, Ar-ion, Ti:Sapph, CO2 pumped THz laser). ^{3}He and ^{4}He optical and non-optical cryostats with magnets, dry dilution refrigerators.

Equipment serviced

Scanning probe microscopes, evaporators, sputtering machines, lasers, ^{3}He cryostats, x-ray diffractometers.

Software development

Extensive LabView skills, automated several scanning probe microscopes, evaporators and diffractometers, programmed 6 data acquisition systems for scanning probe microscopy, transport and optical measurements working in magnetic fields since 2002 and all these systems are still in use. Data processing in Matlab.

CAD Engineering

Solid Works, AutoDesk AutoCAD and Inventor Professional.

Supervision and teaching

Physics problems class and laboratory demonstrations in University of Exeter.

Development and supervision of various projects for summer and rotational students in Weizmann Institute of Science.

Publications

2015, Detection of anomalous Hall voltages in ultra-high mobility two-dimensional hole gases generated by optical spin orientation.
D. Vasyukov, A. Plaut, M. Henini, L. Pfeiffer, K.W. West, C.A. Nicoll, I. Farrer, D.A. Ritchie, *Phys. Rev. B* **91**, 201406(R)

2013, A scanning superconducting quantum interference device with single electron spin sensitivity.
D. Vasyukov, Y. Anahory, L. Ne'eman, A. Finkler, Y. Segev, Y. Myasoedov, M. L. Rappaport, M. E. Huber and E. Zeldov, *Nature Nanotechnology* **8**, 639; doi:10.1038/nnano.2013.169.

2012, Scanning superconducting quantum interference device on a tip for magnetic imaging of nanoscale phenomena. A. Finkler, D. Vasyukov, Y. Segev, L. Ne'eman, E. O. Lachman, M. L. Rappaport, Y. Myasoedov, E. Zeldov and M. E. Huber, *Rev. Sci. Instrum.* **83**, 073702.

2012, Nano-sized SQUID-on-tip for scanning probe microscopy. A. Finkler, D. Vasyukov, Y. Segev, L. Ne'eman, Y. Anahory, Y. Myasoedov, M. L. Rappaport, M. E. Huber, J. Martin, A. Yacoby and E. Zeldov, *Journal of Physics: Conference Series* **400**, 052004.

2010, Self-aligned nanoSQUID on a tip. A. Finkler, Y. Segev, Y. Myasoedov, M. L. Rappaport, L. Ne'eman, D. Vasyukov, E. Zeldov, M. E. Huber, J. Martin and A. Yacoby, *Nano Letters* **10**, 1046.

2010, Measurement of a large hole g-factor in two-dimensional hole gases. D. A. Vasyukov, A. S. Plaut, M. Henini, *Physica E* **42**, 964.

2010, Intrinsic photoinduced anomalous Hall effect. D. A. Vasyukov, A. S. Plaut, M. Henini, L. N. Pfeiffer, K. W. West, C. A. Nicoll, I. Farrer, D. A. Ritchie, *Physica E* **42**, 940.

2010, Photoinduced anomalous Hall effect in 2-dimensional hole gases. D. A. Vasyukov, A. S. Plaut, A. H. MacDonald, M. Henini, L. N. Pfeiffer and K. W. West, *AIP Conf. Proc.* **1199**, 449.

2009, The circular photogalvanic effect in two-dimensional hole gases in magnetic field. D. A. Vasyukov, A. S. Plaut, A. H. MacDonald, M. Henini, *Int. J. Mod. Phys. B.* **23**, 2867.

2004, Thermal fluctuations in ultrasmall intrinsic Josephson junctions. A. Franz, Y. Koval, D. Vasyukov, P. Mueller, H. Schneidewind, D. A. Ryndyk, J. Keller and C. Helm, *Phys. Rev. B* **69**, 014506.

2003, Intrinsic Josephson junctions: integrated circuits and possible applications. H. Wang, J. Chen, P. Wu, T. Yamashita, D. Vasyukov and P. Mueller, *Supercond. Sci. Technol.* **16**, 1375.

2001, Structural transformations in low-temperature grown GaAs:Sb. D. A. Vasyukov, M. V. Baidakova, V. V. Chaldyshev, A. A. Suvorova, V. V. Preobrazhenskii, M. A. Putyato and B. R. Semyagin, *J. Phys. D: Appl. Phys.* **34**, A15.

2001, The role of lead in growing GaInAsSb solid solutions by LPE. T. I. Voronina, T. S. Lagunova, E. V. Kunitsyna, Ya. A. Parkhomenko, D. A. Vasyukov, Yu. P. Yakovlev, *Semiconductors* **35 (8)**, 904.

Oral presentations

2014 APS March, Denver, USA (invited)

2012 M2S, Washington DC, USA

2011 LT26, Beijing, China

2008 HMF18, Saõ-Pedro, Brasil

2008 ICPS, Rio de Janeiro, Brasil

Referees

Prof. Martino Poggio, research supervisor, University of Basel, email: martino.poggio@unibas.ch

Prof. Eli Zeldov, research supervisor, Weizmann Institute of Science, email: eli.zeldov@weizmann.ac.il

Dr. Annette Plaut, Ph.D. supervisor, University of Exeter, email: a.s.plaut@exeter.ac.uk