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UK—RUSSIA
YEAR OF SCIENCE
AND EDUCATION/2017



P.N. Lebedev Physical
Institute of the Russian
Academy of Science

British-Russian Workshop on Quantum Technologies

Co-Chairs of the Workshop

Erling Riis, *Strathclyde University, UK*

Nikolay Kolachevsky, *Lebedev Physical Institute, Moscow, Russian Academy of Sciences, Russia*

Victor Zadkov, *Institute of Spectroscopy, Troitsk, Moscow, Russian Academy of Sciences, Russia*

Organizers

Lebedev Physical Institute, Russian Academy of Sciences, Moscow, Russia

Institute of Spectroscopy, Russian Academy of Sciences, Troitsk, Moscow, Russia

Sponsored by

British Embassy in Moscow

Lebedev Physical Institute, Russian Academy of Sciences, Moscow, Russia

Location

All the Workshop sessions will be arranged in the Physical Room (Ground floor) at the Lebedev physical Institute, Moscow, Russia (Leninsky Ave, 53, Moscow).

Moscow, Russia • 2017

20 March 2017 (Monday)

Time	Titles of the talks
	Session I (Chair: Victor Zadkov, Institute of Spectroscopy, RAS, Troitsk, Moscow)
09:00-09:30	N.N. Kolachevsky , "Quantum interference in precision measurements and the proton charge puzzle," Lebedev Physical Institute, Moscow, Russia
09:30-10:00	Erling Riis , "UK Quantum Technology Initiative - measurements and sensing," Strathclyde University, UK
10:00-10:30	S.N. Bagayev , "TBD", Institute of Laser Physics SB RAS, Novosibirsk, Russia
10:30-11:00	Coffee Break
	Session II (Chair: Erling Riis, Strathclyde University, UK)
11:00-11:30	Stefan Kuhr , "Quantum-gas microscopes — Quantum-simulation with single-particle access," Strathclyde University, UK
11:30-12:00	I.I. Ryabtsev , D.B. Tretyakov, V.M. Entin, I.I. Beterov, E.A. Yakshina, C. Andreeva, "Controlling the interactions between cold Rydberg atoms by a time-varying electric field", Rzhanov Institute of Semiconductor Physics, RAS, Novosibirsk, Russia; Novosibirsk State University, Novosibirsk, Russia
12:00-12:30	Ian Robert Hill , "Sr Optical Lattice Clocks at NPL," National Physics Laboratory, UK
12:30-13:00	S.N. Bagayev, A.V. Taichenachev , V.I. Yudin, "New methods and approaches in high-precision spectroscopy of ultracold atoms and ions", Institute of laser physics SB RAS, Novosibirsk 630090, Russia; Novosibirsk State University, Novosibirsk 630090, Russia
13:00-14:30	L U N C H
	Session III (Chair: Stefan Kuhr, Strathclyde University, UK)
14:30-15:00	Winfried Karl Hensinger , "Constructing a microwave trapped ion quantum computer," University of Sussex, UK
15:00-15:30	A. Turlapov , "Interference in a chain of fluctuating Bose condensates," Institute of Applied Physics, RAS, Nizhniy Novgorod, Russia
15:30-16:00	I.I. Beterov , M. Saffman, D.B. Tretyakov, V.M. Entin, E.A. Yakshina, G.N. Hamzina, E.A. Kuznetsova, S. Bergamini, I.I. Ryabtsev, "Quantum gates based on adiabatic passage of the Forster resonances and Rydberg blockade", Rzhanov Institute of Semiconductor Physics, RAS, Novosibirsk, Russia; Novosibirsk State University, Novosibirsk, Russia
16:00-16:30	S.A. Moiseev , "Photon echo quantum memory and its implementation in optical and microwave spectral range," Kazan Quantum Center, Kazan National Research Technical University, Kazan, Russia
16:30-17:00	A.A. Kalachev "Towards off-resonant Raman quantum memory in rare-earth-ion doped crystals", E.K.Zavoisky Physical-Technical Institute, Kazan, Russia
17:00-18:30	Bus transfer from the Lebedev Physical Institute to the British Embassy
18:30-20:00	Welcome Reception at the British Ambassador's Residence in Moscow

21 March 2017 (Tuesday)

Time	Titles of the talks
	Session IV (Chair: Alexey Kalachev, E.K.Zavoisky Physical-Technical Institute, Kazan, Russia)
09:00-09:30	Erling Riis , "Clocks and interferometers with cold atoms," Strathclyde University, UK
09:30-10:00	Anna Ursula Kowalczyk , "UK Quantum Technology Hub for Sensors and Metrology: an overview of projects in Birmingham," University of Birmingham, UK
10:00-10:30	V.I.Balykin , "Trapping and manipulation of atoms on nano scale," Institute of Spectroscopy RAS, Troitsk, Moscow, Russia
10:30-11:00	Coffee Break
	Session V (Ian Robert Hill, National Physics Laboratory, UK)
11:00-11:30	V.L. Velichansky , "Diode Lasers, Alkalies and Metrological Applications," Lebedev Physical Institute of RAS, Moscow, Russia
11:30-12:00	E. Davletov and A. Akimov "Deep laser cooling of Thulium atom," Russian Quantum Center, Moscow, Russia
12:00-12:30	V.I. Belotelov , "Generation of spin waves in magnetic dielectric films by fs-laser pulses," Russian Quantum Center, Moscow, Russia
12:30-13:00	A. Ulanov , A.Lvovsky "Schrödinger cats in quantum optics," Russian Quantum Center, Moscow, Russia
13:00-14:30	L U N C H
14:30-19:00	Lab tour to Lebedev Physical Institute & Lomonosov Moscow State University (ILC + Kulik's Labs)
19:00-20:30	Dinner

22 March 2017 (Wednesday)

Time	Titles of the talks
	Session VI (Winfried Karl Hensinger, University of Sussex, UK)
09:00-09:30	N. Pavlov, G. Lichachev, S. Koptyaev, A.Voloshin and M. Gorodetsky , "Kerr soliton frequency combs in microresonators self-injection locked to diode lasers," Russian Quantum Center, Moscow, Russia
09:30-10:00	S.S. Straupe , G.I. Struchalin, I.A. Pogorelov, K.S. Kravtsov, I.V. Radchenko, I.V. Dyakonov, S.P. Kulik, "Adaptive measurements in quantum tomography," Lomonosov Moscow State University, Moscow, Russia
10:00-10:30	I.V. Dyakonov , A.A. Kalinkin, M.Yu. Saygin, A.G. Abroskin, I.V. Radchenko, I.B. Bobrov, I.A. Pogorelov, S.A. Evlashin, P.V. Dyakono, S.M. Zyryanov, S.S. Straupe, S.P. Kulik, "Laser written programmable integrated photonic multiport interferometer," Lomonosov Moscow State University, Moscow, Russia
10:30-11:00	Coffee Break
	Session VII (Andrey Ionin, Lebedev Physical Institute, Russia)
	Winfried Karl Hensinger , "Constructing a microwave trapped ion quantum computer," University of Sussex, UK
11:00-11:30	P.N. Melentiev , "Nano localized source of femtosecond radiation," Institute of Spectroscopy RAS, Troitsk, Moscow, Russia
11:30-12:00	A.P. Alodjants , D. Tsarev, M. Lebedev, "Quantum Technologies with Exciton Polaritons in Semiconductor Microcavities", ITMO University, Saint Petersburg, Russia
12:00-12:30	G.N. Goltsman , "Quantum photonics integrating circuits", Moscow State Pedagogical University, Moscow, Russia
12:30-12:45	V.I. Kovalev , "The photoelectric effect: The Einstein's model vs classical electrodynamics," Lebedev Physical Institute of RAS, Moscow, Russia
12:45-13:45	Bus transfer to the Institute of Spectroscopy in Troitsk, Moscow
13:45-14:30	Tea & Coffee (+snacks); Intro to the Institute of Spectroscopy of the Russian Academy of Sciences
14:30-18:00	Lab tour (organized in small groups) around the ISAN
18:00-18:15	Bus transfer to the Restaurant "Picknik na Obochine"
18:15-21:00	Workshop Reception
21:00-22:00	Bus transfer back to the hotel in Moscow

23 March 2017 (Thursday)

Time	Titles of the talks
	Session VIII (Nikolay Kolachevsky, Lebedev Physical Institute, Russia)
09:00-09:30	Misha Sumetsky , “Ultraprecise nanophotonics at the fiber surface,” Aston University, Birmingham, UK
09:30-10:00	A.V. Naumov , “Local field effects in spectra of single dye molecules in solids: applications for nanoscopy,” Inst. of Spectroscopy RAS, Troitsk, Moscow, Russia
10:00-10:30	I.V. Smetanin ¹ , A. Bouhelier ² , I. E. Protsenko ¹ , A. V. Uskov ^{1,3} , “Nanoresotron — novel concept of optical nanoantenna excitation through the dissipative instability of DC electric current in a quantum well”, ⁽¹⁾ Lebedev Physical Inst., Moscow, Russia; ⁽²⁾ Laboratoire Interdisciplinaire Carnot de Bourgogne, CNRS-UMR 6303, Univ.-Bourgogne Franche-Comte, France; ⁽³⁾ ITMO University, Sankt-Petersburg, Russia
10:30-11:00	Coffee Break
	Session IX (Andrey Naumov, Institute of Spectroscopy, Troitsk, Moscow, Russia)
11:00-11:30	K. Khabarova “Symathetic cooling of Al ions for indirect reading of quantum states using quantum logic protocol,” Lebedev Physical Institute, Moscow, Russia
11:30-11:45	S.I. Kudryashov , “Ultrafast nanostructured light and photonic nanostructures”, LPI/ITMO
11:45-12:00	A.V. Uskov ^{1,2} , J.B. Khurgin ³ , I.V. Smetanin ¹ , I.E. Protsenko ¹ , M. Buret ⁴ , and A. Bouhelier ⁴ , “Biased Nanoscale Contact as Active Element for Electrically Driven Plasmonic Nanoantenna,” ⁽¹⁾ Lebedev Physical Inst., Moscow, Russia; ⁽²⁾ ITMO Univ., Sankt-Petersburg, Russia; ⁽³⁾ John Hopkins Univ., Baltimore, USA; ⁽⁴⁾ Laboratoire Interdisciplinaire Carnot de Bourgogne, CNRS-UMR 6303, Univ.Bourgogne, France
12:00-12:15	I.E. Protsenko ¹ , E. C. Andre ² , M. Wubs ² , A. V. Uskov ^{1,3} and J. Mork ² , “Collective effects in small lasers shown by simple formula for $g_2(0)$ ”, ⁽¹⁾ Lebedev Physical Institute of RAS, Moscow, Russia; ⁽²⁾ Department of Photonics Engineering, Technical University of Denmark, Denmark; ⁽³⁾ ITMO University, St. Petersburg, Russia
12:15-12:30	M.I. Tribelsky , “Peculiarities of Resonant Light Scattering by Particles with High Refractive Index,” Lomonosov Moscow State University, Russia; National Research Nuclear University MEPhI, Moscow, Russia
12:30-12:45	K.I. Gerasimov , “Crystal 7LiYF4 : 167Er3+ (166 Er 3+) for Raman quantum storage,” Kazan Quantum Center, Kazan National Research Technical University, Kazan, Russia
12:45-13:00	I.Z. Latypov , “Developing narrowband SPDC-based single-photon sources,” E.K.Zavoisky Physical-Technical Institute, Kazan, Russia
13:00-13:15	A. Fedorov , “Advanced post-processing procedure for industrial QKD systems,” Russian Quantum Center
13:15-13:30	V.Vorobyov ^{1,3,6} , V.Soshenko ^{1,4,6} , S.Bolshedvorksii ^{1,3,4} , A.Smolyaninov ^{2,6} , V.N. Sorokin ¹ and A.Akimov ^{1,4,5} “Towards nuclear assisted quantum sensor applications with diamond color centers,” ⁽¹⁾ Lebedev Physical Inst., Moscow, Russia; ⁽²⁾ Photonic Nano-Meta Technologies LLC, Russia; ⁽³⁾ Moscow Insti. of Physics and Technology, Moscow Region, Russia; ⁽⁴⁾ Russian Quantum Ctr, Moscow, Russia; ⁽⁵⁾ Texas A & M Univ., College Station, USA; ⁽⁶⁾ Sensor Spin Technologies LLC, Moscow Region, Russia
13:00-13:15	C L O S I N G
13:15-18:00	Bus transfer and lab tour to the Russian Quantum Center

Time**Titles of the talks**

18:00-19:00

Bus transfer back to the hotel