Quantum Science: Light-Matter Interaction
The Ninth German-Russian Week of the Young Researcher

Lomonosov Moscow State University
Faculty of Physics
September 23-26, 2019

In September 2019, the German Academic Exchange Service (DAAD) and the German Research Foundation (DFG) under the umbrella of the German Centre for Research and Innovation (DWIH Moscow) will hold the 9th German-Russian Week of the Young Researcher. The main goal of these weeks is to encourage wider networking and stronger partnerships among early career researchers. Doctoral and postdoctoral researchers as well as professors are invited to come together and to present their research projects in the field of "Quantum Science: Light-Matter Interaction" at the Faculty of Physics of the Lomonosov Moscow State University (MSU). The Week is organized with the support of the Embassy of the Federal Republic of Germany in Moscow.

Given the growing population and rising living standards, the world is faced with an increasing demand of power consumption, data storing and communication. Modern technologies rely on devices with cleverly designed electronic and optical properties. Finding new functionalities in quantum science, for example, for sensors, information storage and processing, cryptography, or metrology, requires fundamental understanding at the quantum level. The decreasing size of basic circuits in modern micro- and nano-electronics leads to the necessity to consider quantum effects and to apply quantum science approaches for the careful analysis of their properties. Experimental studies with ultrahigh resolution in space and time and advanced theoretical descriptions are mandatory. In this sense, one of the most important issues in modern quantum science is the interaction of optical fields with micro- and nanoscale solid-state circuits. The ability to manipulate these circuits by light will have amazing possibilities for studying fundamental questions as well as applications. Examples are the generation of spin-polarized states in semiconductor nanostructures, the precise manipulation of micro- and nanoparticles, and the non-trivial susceptibility of metastructures. In the future, quantum science and technologies should lead to practically significant scientific and technical results in the areas of spintronics, photonics, metamaterials, quantum optics, quantum computing and quantum communications.

Experts and young scientists will discuss particular topics of interest for quantum science and technology including aspects form solid-state physics, optics, and photonics. Special emphasis will be given to the challenges of the interaction of light with nano-scale solid-state systems as one of the key problems in nano-electronics and the integration of quantum devices. The organizers strive for a good mix of participants at different career stages and different fields of expertise including solid-state physics, modern photonics, optics of metamaterials, and quantum optics, and from experiment as well as from theory.

The Weeks of the Young Researcher take place in Russia once a year in order to discuss current topics of mutual interest. The Lomonosov Moscow State University will host the German-Russian Week this year. We will discuss Quantum Science at the Faculty of Physics in cooperation with the Quantum Technologies Center. The Center was established in 2018 and is specialized in quantum technology, solid state physics, quantum optics, photonics, data storage, quantum simulations, quantum computing, and quantum cryptography.

For more information, feel free to contact us:

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