Novel diamond defects for quantum sensors

Job type: PhD position in experimental physics

Employer: Ulm University, Institute for Quantum Optics

Employment: Part-time, temporary

Salary: 50% TV-L E13

Expected start date: February 2021

Location: Ulm, Baden-Württemberg, Germany

Project description:

Optically and spin active color centers in diamond are highly promising systems for future quantum technology. For example, a well-known nitrogen-vacancy center is capable of measuring magnetic and electric fields, temperature, pressure, etc. However, different applications stimulate to explore other diamond defects.

The proposed PhD project aims at the investigation of the fundamental properties of new color centers in diamond and the development of diamond-based sensors. Particularly, the work implies evaluation of sensitivity limits, development of measurement protocols, and demonstration of the system's usability.

This work covers many experimental techniques such as confocal microscopy, low-temperature spectroscopy of single impurity centers, highly sensitive photocurrent measurements, single spin magnetic resonance techniques, spin relaxometry as well as cleanroom methods for the samples preparation such as photolithography. The project will be carried out in collaboration with the University of Stuttgart.

The research will be conducted in one of the world's leading groups specialized in the single defects in solids. You will enjoy a friendly atmosphere, an international environment, and interesting work on the cutting edge of science.

Your profile:

Motivated Master or diploma students in physics (preferably with a strong background in optics, atomic or solid-state physics) are encouraged to apply.

Applications will be accepted until the position is filled.

Contact: Dr. Petr Siyushev

Email: petr.siyushev[at]uni-ulm.de

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