FZU – Institute of Physics of the Czech Academy of Sciences is a leading public research institution located in Prague, Czechia. FZU is the largest institute of the Czech Academy of Sciences with more than 1100 employees. FZU pursues high-quality, innovative, and ground-breaking fundamental and applied research. Our researchers try to understand and explain the basic phenomena and processes of this world and respond to the current scientific and technical challenges of society.

Light and matter theory group at Institute of Physics (FZU) of the Czech Academy of Sciences (CAS) in Prague invites applications for the position:

Postdoctoral Researcher in Molecular Light-Matter Interfaces and Molecular Quantum Optics

The successful candidate (m/f/d) will join a research team lead by Tomáš Neuman established to investigate light-matter interaction on the nanoscale, including theoretical engineering of molecular emitters for quantum devices. **The candidate will become a member of the QuantERA team working on the project** MOLAR (**MOLecular LAttice quantum electRodynamics**)**.**

What you will do:

- Focus on the investigation of molecular emitters composed of single dye molecules or their aggregates using ab-initio methods. This will involve describing the molecule's vibronic structure and engineering its emission properties e.g. by controlling the molecule's environment, creating molecular aggregates etc.
- Integrate results of ab-initio calculations into models addressing light-mater interaction, particularly in the context of photonic lattices where collective effects related to engineered long-range optical interactions emerge. This involves developing models accounting for the dynamics of the excitations in molecular emitters coupled to structured photonic baths.
- Participate in group meetings, preparation of manuscripts and dissemination of results at conferences.
- Work in an international environment and collaborate with our partners.

Required qualifications:

- PhD in physics, chemistry, or related field.
- Basic knowledge of ab-initio methods to address molecular excitations (e.g. Gaussian, NWChem or any other quantum-chemistry software).
- Knowledge of quantum optics and related models and techniques or interest to learn them.
- Programming skills (e.g., Python, Matlab, FORTRAN, C, C++).
- Advanced English (written and spoken) is a must.
- Will to learn new techniques and approaches.

Beneficial qualifications:

- Experience with advanced ab-initio modelling of molecules.
- Practical experience in the field of quantum optics/photonics/plasmonics.

Terms of employment:

- Start of employment in July 2024, depending on the availability of the applicant.
- Full-time job with flexible hours, extended vacations, work from home, and a wide range of other benefits.
- 1- 2-year contract with possible extension during the 3-year duration of the QuantERA project.

Application procedure:

- Please send your CV and motivation letter, including the publication record to the email address below: Monika Svobodová, Email: kariera@fzu.cz.
- For further information please contact Tomáš Neuman: neuman@fzu.cz - Head of Working Group

Fyzikální ústav Akademie věd České republiky
Institute of Physics of the Czech Academy of Sciences

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