The Friedrich Schiller University Jena connects: People and ideas, science and business, universities and non-university research. Rooted in the heart of Germany and linked to the whole world, it shapes Jena's character as a future-oriented and cosmopolitan city.

The Institute for Applied Physics of the Faculty of Physics and Astronomy seeks to fill a position as

**PhD student / Postdoctoral researcher w/m/d**

in the DFG-funded collaborative research center CRC 1375 NOA (www.noa.uni-jena.de). The application deadline is 29.02.2020 (or until the position has been filled). The earliest starting date of the position is 01.04.2020.

**Job description:**

The CRC is devoted to explore nonlinear light-matter interaction in atom scale materials and photonic structures, where the classical nonlinear theory of bulk materials no longer remains valid and light-matter interaction is dominated by optical surfaces, material interfaces, and quantum effects. It explores nonlinear optics using experimental and numerical models and aims to link fundamental aspects of solid state physics of nanostructures with high-energy light matter interaction.

The project on “Ultrafast nonlinear optics in nanolaminates” explores light-matter interaction in nanolaminates. These are atomically thin layers and atom-scale particles composed of metals, dielectrics and two-dimensional materials. The scale of the layers and particles can range from a few hundred nanometers down to individual atoms. The first focus of the PhD-position is the development of nonlinear characterization techniques for the materials in question, using femtosecond lasers. The second focus is the development of a conceptual understanding of the laminate’s nonlinear response and the way it is influenced by the material’s band-structure, composition, and scale. This is a joint-project with the group on Atomic Layer Deposition, which focusses on the development of the nanolaminates themselves.

**Your tasks:**

- development and operation of nonlinear optical characterization setups (nonlinear microscope, time-resolved nonlinear characterization setups)
- analysis of the generation of second-harmonic and third-harmonic light from optical nanostructures with the aim to generate an understanding for the nonlinear response of nanolaminates
- application of numerical models to model the flow of light in nanolaminates
- application of techniques for near field analysis (NSOM, PEEM) of ultrafast light-matter-interaction
- publishing / presenting results in scientific journals and conferences
- participation in and contribution to activities of the collaborative research center

**Qualification requirements:**

- an excellent master’s degree in physics, photonics, nanoscience, or a related discipline
- experience with the creation and operation of optical setups and analysis techniques, particularly with respect to femtosecond lasers and nonlinear optics
- background knowledge in solid state physics, nanophotonics and nonlinear optics
• experience with numerical optics and photonics software (e.g. Lumerical) is a plus
• excellent Communication skills in written and spoken English (German is a plus)
• genuine interest in planning, executing and analyzing experiments and simulations in fundamental research

We offer:

• an exciting field of activity with creative leeway
• multidisciplinary research environment
• attractive fringe benefits, e.g. Capital Assets, Job Ticket (benefits for public transport), occupational pensions (VBL)
• salary in accordance with the terms of the collective agreement for the public service of the Länder (TV-L) in accordance with personal qualifications
• university health promotion and a family-friendly working environment with flexible working hours

Selected candidates will receive a position limited to the 30.06.2023 according to the German public service salary scale. It is a part-time (75%) job.

Severely handicapped people are given preference in case of equal qualifications, aptitude and professional qualifications.

The research is carried out in an institute with world-class equipment, highly-skilled staff and state-of-the-art laboratories. It takes place in a unique collaborative environment, of interdisciplinary researchers, which focus on a common mission: to understand nonlinear light matter interaction down to the atomic scale.

Please send your application by email with the usual documents (CV, Letter of motivation, references, list of publications, etc.) mentioning the registration number until 29.02.2020 with the Reg.-Nr.: 25/2020 to

Friedrich-Schiller-Universität
Institut für Angewandte Physik
Albert-Einstein-Str. 15
07745 Jena

E-Mail: (falk.eilenberger@uni-jena.de)

Questions regarding the position can be addressed to the same address.

In the case of an application by letter we ask you to submit your documents only as copies, as those are properly destroyed after the application process. Please also note our application hints at: www.uni-jena.de/stellenmarkt_hinweis.html.