

# Master/bachelor thesis

in the subject area of

## Waveguide high harmonic generation

The generation of high harmonics of a fundamental driving laser is an elegant way to produce coherent short-wavelength radiation with table-top setups. Due to its compactness these sources have found numerous applications in spectroscopy, atomic and molecular physics, microscopy and many others. Fiber laser driven sources have in recent years shown a significant performance increase by generating a high photon flux with high average power lasers. Despite the high photon flux a high repetition rate and high photon energy are interesting, in particular, for spectroscopic applications. For that purpose the use of appropriate waveguides can be beneficial.

The goal of the work is to develop an experimental setup that can be used to generate high harmonics in a waveguide. In particular, one of the waveguide structures to be implemented is a novel photonic crystal fiber called Kagome fiber. Furthermore, experiments on high harmonic generation have to be performed that aim for understanding the generation mechanisms and conditions as well as to measure conversion efficiencies into the short wavelength region and a complete spatial and spectral characterization of the generated radiation.

Please, send your application preferably by email to

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