



PhD position

Mid infrared dual-comb spectroscopy

The laboratory for Optical Systems at the Department of Microsystems Engineering (IMTEK) of the University of Freiburg researches on different aspects of optical frequency conversion, in particular with whispering gallery resonators, using state-of-the-art methods and techniques. We develop novel sources for laser light providing unequalled wavelength flexibility and integration density. Our research spans from the investigation of fundamental aspects to practical applications.

In the frame of this project, we aim to enable the application of frequency combs for spectroscopy and gas detection via optical frequency conversion. Frequency combs are lasers emitting at multiple well-defined wavelengths simultaneously, i.e. the emission spectrum is remindful of a comb. For the concept of frequency combs Theodor W. Hänsch was awarded the Nobel Prize in Physics in 2005. Nowadays various groups worldwide work on their implementations for various applications.

The PhD project is embedded into a joint German-French research initiative. Here, our group collaborates with the Fraunhofer Institute for Physical Measurement Techniques IPM and with the Carnot de Bourgogne Interdisciplinary Laboratory. The goal is to find out how to convert frequency combs efficiently to the wavelengths required, e.g. for the detection of trace gases in the atmosphere. We are looking for a candidate with an above-average Master's degree in physics, photonics, microsystems technology or similar with interest in a challenging research topic and the ability to work independently in an interdisciplinary environment of physicists and engineers.

We offer an exciting research topic, excellent equipment, and intense supervision embedded in a highly motivated and dynamic team. Freiburg does not only offer a high quality of life but also opportunities for scientific development on a very high level with a corresponding reputation. For the work on this project, the nearby Fraunhofer Institute for Physical Measurement Techniques IPM provides access to its infrastructure.

The employment is based on a 75 % E13 position for three years.

Please send your applications including a cover letter, curriculum vitae and certificates until 15.04.2022 to PD Dr. Ingo Breunig (ingo.breunig@imtek.de). He will also gladly answer questions regarding this announcement.