PhD position in optical frequency combs and mid-IR spectroscopy

Time and Frequency Laboratory, Physics Institute, University of Neuchâtel, Switzerland
Research Group of Prof. Thomas Südmeyer

Optical frequency combs act as extremely accurate rulers in the frequency domain and provide a phase-stable link between microwave and optical frequencies. Their invention revolutionized various fields in metrology and was honored by the 2005 Nobel Prize in Physics. Stabilized frequency combs have enabled huge progress in a wide range of areas, in particular in metrology and spectroscopy.

We are looking for a highly motivated PhD student who would like to conduct experimental research in the field of mid-IR quantum cascade laser (QCL) frequency combs. The work includes the analysis of the noise properties of this novel type of chip-based semiconductor sources that have a great potential for mid-IR dual-comb spectroscopy, and their stabilization by different methods. This research activity is part of a national project that targets mid-IR frequency comb spectroscopy based on the stabilized QCL sources. It involves intensive collaboration with the project partners ETHZ (Prof. J. Faist), EMPA (Dr L. Emmenegger) and the company iRsweep.

**Research topics**
- Mid-IR frequency combs
- Quantum cascade lasers (QCLs)
- Time and frequency metrology
- Spectroscopy
- Noise analysis and optimization

**What we provide**
- Excellent research and working conditions
- Independent work with a high level of responsibility
- Competitive salary (1st year PhD: 59 kCHF)
- 4-year PhD contract

**What we expect**
- Enthusiasm for experimental research
- Highly motivated to work in the area of lasers and spectroscopy
- Ability to work in a team environment
- Master or diploma in physics, electrical engineering, or a related discipline
- Good oral and written communication skills in English (French language skills are advantageous, but not required)
- Independent working style

The position is immediately available. Applicants are encouraged to send a curriculum vitae, the diploma or master thesis, and provide names and contact information for at least two referees.

**For questions and applications, please contact:** job.ltf@unine.ch
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