

Research Project

Basel Shared Frequency Comb Facility

Third-party funded project

Project title Basel Shared Frequency Comb Facility

Principal Investigator(s) [Willitsch, Stefan](#) ;

Co-Investigator(s) [Warburton, Richard](#) ; [Maletinsky, Patrick](#) ; [Treutlein, Philipp](#) ;

Organisation / Research unit

Departement Chemie / Chemische Physik (Willitsch)

Department

Project start 01.12.2014

Probable end 30.11.2015

Status Completed

We will set up a femtosecond laser frequency comb system that will be shared between several research groups in the Departments of Chemistry and Physics at the University of Basel. The comb light will be distributed via optical fibers to the laboratories of the applicants and used to frequency-stabilize a number of laser systems for research in quantum science and technology. It will also be used as an extremely stable frequency reference for precision spectroscopic and quantum-optics experiments carried out by the applicants.

This investment in a joint infrastructure will considerably reduce the technical overhead for laser stabilization in the applicant research groups. It will open up new avenues for research in quantum science, quantum optics and chemical physics ranging from the precision spectroscopy of single molecules and new schemes for coupling nano-oscillators to ultracold atoms to the precise optical manipulation of nitrogen-vacancy spins in diamond. The requested frequency comb facility will form a technical cornerstone of the research carried out within the National Competence Center for Research in Quantum Science and Technology (NCCR QSIT) in Basel to ensure the continuing competitiveness of the applicant groups in this field.

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