

Abstract Submitted
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TOPTICA Photonics Workshop: From Lasers to Clocks: TOP-TICAs Involvement in Quantum Technologies JUERGEN STUHLER, TOP-TICA Photonics, Inc — TOPTICA Photonics is heavily involved in quantum technologies (QT), both as a provider of quantum-enabling laser systems and as a key partner in collaborative QT projects, including two funded by the German government and four that are part of European quantum flagship efforts. Two of these projects aim at the realization of user-friendly and transportable optical atomic clocks. Within the German pilot project *opticlock* (www.opticlock.de), TOPTICA leads a consortium of six companies, two universities, one federal institute, and one research institute to realize a 19 rack-sized optical atomic clock based on a single Yb ion. The clock is set up and is currently being evaluated at the German metrology institute Physikalisch-Technische Bundesanstalt (PTB) in Braunschweig/Germany. TOPTICAs role in the project is manifold: coordinator, system designer, system integrator, and provider of lasers. Besides a description of these roles, I will present the *opticlock* set-up and report on the characterization of the *opticlock* performance. In the quantum flagship project *iqClock* (www.iqclock.eu), an optical atomic clock based on Sr atoms within a magic wavelength optical lattice is being built. TOP-TICA has developed 19 rack-integrable tunable diode laser systems as well as optical frequency combs and will provide a laser rack system containing all lasers required to operate the clock.. I will present details on this laser rack system and show how it also paves the way for other quantum technology applications such as quantum computing or quantum simulation.

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