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Scalable infrastructure for Sr optical clocks with integrated photonics

Thursday 19 October 2023 12:00 (30 minutes)

We report on development of a strontium optical lattice clock built with integrated photonics. We implement free-space laser beam control of positioning, pointing, shaping, polarization, and integration with metasurface optics, and absolute laser-frequency stabilization with waveguide supercontinuum generators. Such use of integrated photonics can simplify the system integration of Sr clocks. We demonstrate laser cooling to microKelvin temperature with narrow-line cooling, and we will describe ongoing work to probe the clock transition with lattice-trapped atoms.

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