Universität Basel

Research Project

Entanglement on Atom Chips

Third-party funded project

Project title Entanglement on Atom Chips
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Entanglement-based technologies, such as quantum information processing, quantum simulations, and quantum metrology, have the potential to revolutionize our way of computing and measuring, and help to clarify the puzzling concept of entanglement itself. Ultracold atoms on atom chips are an attractive system for their implementation, as they provide control over quantum systems in compact, robust, and scalable setups. This proposal consists of three projects investigating entanglement on atom chips, focusing on both fundamental physics and possible applications: The study of multi-particle entanglement for quantum metrology, the development of novel techniques for chip-based quantum state control, and the realization of a two-qubit quantum gate.

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