

Invited talk

Scaling quantum systems for clock and fundamental physics

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Scaling up quantum systems to increasingly large sizes promises to advance the performance of atomic clocks and bring opportunities for new discovery. Quantum technology has brought minute-long optical coherence to tens of thousands of atoms, enabling unprecedented measurement precision. The combination of stable laser, ultrafast optics, and precision metrology has provided new tools for nuclear physics, leading to quantum-state-resolved laser spectroscopy of thorium-229 nuclear transition. The permeation of quantum metrology to all corners of physics sparks new ideas for testing fundamental laws of nature and searching for new physics.