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Quantum sensing with atoms and ions

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Abstract

I will discuss two experiments at UCLA towards sensing motion with laser-cooled atoms. The first borrows techniques from cavity quantum electrodynamics (QED) to use an optical cavity to directly read out the motion of an ensemble of neutral atoms over sub-wavelength scales on a microsecond timescale. The second experiment combines techniques from matter wave interferometry and quantum computation towards the development of a single ion gyroscope.