Physics Special Seminar

Blackbody-Stark and Cold-Collision Shifts in an Optical Lattice Clock

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Abstract:

Optical atomic clocks promise unmatched oscillator stability and ultimate fractional frequency uncertainty in the 1e-17 regime and beyond. Applications of these frequency references range from the generation of low-phase-noise microwaves to tests of fundamental physics. A clock based on an optical lattice of ultracold fermionic ytterbium atoms has been limited by uncertainties due to room-temperature blackbody radiation and atomic density-dependent shifts. We report two precision measurements that substantially reduce these uncertainties: a ~ 20 ppm measurement of atomic polarizability and characterization of p-wave dominated cold-collisions.

Friday, February 17th, 2012
4:00-5:00 pm
Goudsmit Conference Room, LP 208