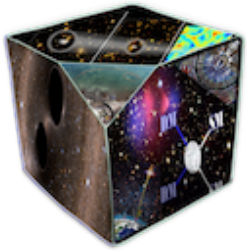

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Atomic physics tests of dark matter and dark energy

Monday, 20 August 2018 12:00 (30 minutes)

Atomic physicists have spent decades developing tools to gain complete quantum control of atoms and ions. These tools have used them to make ever increasing precision measurements - the most prominent example being atomic optical clocks which can now measure frequencies to 10^{-19} precision. Recently there has been increasing interest in leveraging these precision tools to look for small effects from various dark matter and dark energy models. In this talk I will discuss a couple examples. First I will discuss how precision force measurements using atom interferometry can be used to constrain various scalar field models proposed as candidates for dark energy and dark matter. Second I will discuss a new experiment using laser cooled radioactive cesium atoms to search for sterile neutrinos through total energy and momentum reconstruction.

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