

# New Location

## Precision measurement for particle physics

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4:00 p.m. - Wilson Hall, Curia II

Precision measurement offers a powerful new approach for particle physics. I will discuss novel experiments using technologies such as atom interferometry, nuclear magnetic resonance, high precision magnetometry, and torsion balances for direct detection of dark matter and gravitational waves. These provide the optimal method for direct detection of light dark matter candidates such as the axion, often with relatively small-scale experiments. On a larger scale, I discuss a novel gravitational wave detection technology which would allow observation both of astrophysical sources and cosmological sources, including perhaps inflation. Searching for these light fields is additionally motivated by a recently proposed solution to the hierarchy problem using dynamical relaxation in the early universe. Precision measurement technologies open new avenues for probing the origin and composition of the universe.