

# PRISMA+ Colloquium

July 12, 2017 at 1 p.m.  
Lorentz-Raum 05-127, Staudingerweg 7

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## **New searches for exotic spin-dependent interactions**

The possible existence of new light bosons such as axions and axion-like particles (ALPs) is motivated by some of the most important mysteries in modern physics: the nature of dark matter and dark energy, the strong-CP problem, the origin of the matter-antimatter asymmetry of the universe, the hierarchy problem, and the unification of fundamental forces. Precision measurements of atomic spin precession can be used to search for ALPs in a variety of ways.

This talk focuses on recent experiments searching for exotic spin-dependent interactions, including a new measurement of the gravitational dipole moment of the proton and a novel proposal utilizing a micron-scale, precessing ferromagnetic needle to search for such interactions with unprecedented sensitivity.