

Abstract Submitted  
for the FWS16 Meeting of  
The American Physical Society

**Testing the rotation stage for the ARIADNE axion experiment<sup>1</sup>**

CHLOE LOHMEYER, JORDAN DARGERT, University of Nevada, Reno, HARRY FOSBINDER-ELKINS, Princeton University, HANNAH MASON, ANDREW GERACI, University of Nevada, Reno, ARIADNE COLLABORATION — The Axion Resonant InterAction Detection Experiment (ARIADNE) will search for the Peccei-Quinn (PQ) axion, a hypothetical particle that is a dark matter candidate. Using a new technique based on Nuclear Magnetic Resonance in  $^3\text{He}$ , the method can probe well into the allowed PQ axion mass window [1]. Additionally, it does not rely on cosmological assumptions. Our project relies on a stable rotary mechanism and superconducting magnetic shielding. Superconducting shielding is essential for limiting magnetic noise, thus allowing a feasible level of sensitivity required for PQ axion detection. Progress on testing the stability of the rotary mechanism will be reported, and the design for the superconducting shielding in the experiment will be discussed. [1] A. Arvanitaki and A. Geraci, Phys. Rev. Lett. 113, 161801 (2014).

<sup>1</sup>NSF Grant PHY-1509176

Chloe Lohmeyer  
University of Nevada, Reno

Date submitted: 05 Oct 2016

Electronic form version 1.4