

Abstract Submitted  
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**The Art of Neutron Spin Flipping** JUSTIN LIEFFERS, Embry-Riddle Aeronautical University, ADAM HOLLEY, W.M. SNOW, Indiana University — Low energy precision measurements complement high energy collider results in the search for physics beyond the Standard Model. Neutron spin rotation is a sensitive technique to search for possible exotic velocity and spin-dependent interactions involving the neutron from the exchange of light ( $\sim$  meV) spin 1 bosons [1-3]. We plan to conduct such searches using beams of cold neutrons at the Los Alamos Neutron Science Center (LANSCE) and the National Institute of Standards and Technology (NIST). To change the spin state of the neutrons in the apparatus we have developed an Adiabatic Fast Passage (AFP) neutron spin flipper. I will present the mechanical design, static and RF magnetic field modeling and measurements, and spin flip efficiency optimization of the constructed device. I would like to acknowledge the NSF REU program (NSF-REU grant PHY-1156540) and the Indiana University nuclear physics group (NSF grant PHY-1306942) for this opportunity.

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