Ryan LeFebre

**Award:** Undergraduate Student Research; $3900.00

**Status:** Senior, Physics

**Advisor:** Peter Timbie

**Research Topic:** Kinetic Inductance Detectors for Future Space Missions to Observe the Cosmic Microwave Background

**Abstract:** (First Paragraph of Proposal)The cosmic microwave background (CMB) has been fundamental to observational cosmology ever since Arno Penzias and Robert Wilson accidentally discovered it in 1964. The CMB offers important information about the early universe and provides evidence for the big bang theory. In recent years, the polarization anisotropy of the CMB has been of much interest. This polarization is thought to have arisen from gravitational waves caused from Inflation. The theory of Inflation is important because it offers solutions to otherwise unsolved problems in cosmology. A precise measurement of the CMB polarization could provide indirect detection of these primordial gravitational waves and subsequently help prove the theory of Inflation (Krauss).

**Biography:** Ryan LeFebre is currently an undergraduate student at the University of Wisconsin at Madison. In May of 2018 he plans to graduate with a Bachelor of Science degree with majors in astronomy-physics, physics, and applied mathematics. Ryan’s interests include cosmology, astrophysics, and instrumentation. After his undergraduate education he would like to continue his studies at the graduate level. In his free time he enjoys exercising and following Wisconsin sports.

**Congressional District:** 2

**Congressional Representative:** Mark Pocan