

Matthew Wetstein – HEP Seminar – 2/25/2020  
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Title: ANNIE and Next Generation Neutrino Physics

Abstract: As the neutrino physics community enters a new phase of precision measurement, efforts to understand, quantify, and control systematic uncertainties are increasingly urgent. Complimentary efforts to advance neutrino detection technology present an exciting opportunity to extend the scale and sensitivity of future neutrino experiments. ANNIE, the Accelerator Neutrino Neutron Interaction Experiment, is an advanced water-based neutrino detector at Fermilab designed to study neutrino-nuclear interaction physics and develop some of these next generation technologies. In this talk I will discuss the physics and R&D programs in ANNIE, as well as the experimental status and future plans. I will also discuss a new idea to use precision timing in beam physics to control systematic uncertainties in neutrino energy estimation - a technique that could be first demonstrated in ANNIE.