Dylan Yost – Colloquium – February 26, 2026
Colorado State University

Title: Precision tests of quantum electrodynamics through hydrogen spectroscopy and vacuum birefringence

Abstract: Quantum electrodynamics (QED) is the most highly tested theory in science, with predictions made and experimentally confirmed at the parts-per-trillion level. Because of this extremely accurate theory, testing QED predictions with increased precision can provide more accurate determinations of fundamental constants or reveal deviations that indicate new physics. In this talk, I will discuss our lab's efforts to test QED predictions through two avenues. The first is our ongoing effort in precision hydrogen spectroscopy where we are currently focused on measuring relatively narrow 2S-nS two-photon transitions. The second is a new experimental effort where we will attempt to detect photon-photon interaction using femtosecond lasers coupled to high finesse optical cavities.

Bio:
Dylan Yost received his PhD on work with vacuum-ultraviolet frequency combs from the University of Colorado in 2011. In 2012, he was a Humboldt Fellow at the Max Planck Institute for Quantum Optics and worked on precision hydrogen spectroscopy. He is currently an associate professor at Colorado State University. He has received an NSF CAREER award and the NIST Precision Measurement Grant for his hydrogen spectroscopy experiments and was recently named an APS fellow.