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BREAD Gigahertz Pilot: A reflector-based search for the dark photon and the axion

Wednesday, 30 November 2022 13:55 (20 minutes)

BREAD is a broadband search for axions, axion-like particles, and other wave dark matter in the $1 \mu\text{eV}$ to 1 eV range using a reflector which can fit inside high-field solenoidal magnets. This talk will focus on the hardware developments for gigaBREAD, a room temperature, gigahertz frequency search for the dark photon and our first test of the BREAD reflector concept. We will discuss the design and characterization of the reflector and the coaxial horn antenna which couples to the reflector. We will outline the design of the data acquisition system and plans for operation and calibration of the detector during our upcoming run of the pilot experiment. Finally, we will review the sensitivity projections for the gigaBREAD pilot experiment and plans for future implementations of the BREAD reflector concept.

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