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## The ALPS II Experiment

The Any Light Particle Search (ALPS) II is a light-shining-through-a-wall (LSW) experiment which investigates the existence of axions and axion-like-particles (alps) in the sub-eV mass range. Their existence is motivated by QCD physics, astrophysics and cosmology; alps are also promising candidates for dark matter. ALPS-II aims to probe the coupling of axions and alps (to photons) down to a value of  $g_{a\gamma\gamma} = 2 \cdot 10^{-11} \text{GeV}^{-1}$ , which is a significant enhancement over the previously probed regions, independent of the dark matter paradigm. ALPS-II seeks to convert 1064 nm photons into axions/alps in the presence of a magnetic field, in an optical cavity. After passing through a light-tight barrier, these particles can reconvert to photons in another optical cavity, and subsequently be detected. The use of resonant mode-matched optical cavities with photon and signal build-up in them substantially increases the probability for photons to convert to axions/alps and back. The expected signal amounts to about one low-energy (1.165 eV) 1064 nm photon per day, requiring a detector capable of observing this extremely low regenerated photon rate  $\mathcal{O}(10^{-5})$  cps with a correspondingly low dark rate and high detection efficiency. For ALPS II, this is realised by using two detection schemes: a heterodyne detection and a transition edge sensor (TES) scheme. Here, we describe the technical details of the ALPS II experiment, in preparation for a science run in 2022 and the current status TES detection system which will be implemented after the heterodyne scheme. Ongoing investigations, important results, and planned tests will also be discussed.

### In-person participation

Yes

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