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Status and prospects of the ALPS II experiment

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ALPS II is a light-shining-through-a-wall experiment at DESY Hamburg searching for axion-like particles aiming at a sensitivity of $g_{a\gamma\gamma} \approx 2 \times 10^{-11} \text{ GeV}^{-1}$ with the use of long magnet strings and resonant optical cavities. The experiment is being commissioned at present: two 120 m long straightened superconducting dipole magnet strings have been installed and their alignment verified by shining through a properly mode-matched visible laser between the two end station cleanrooms. A thorough characterization of the optics environments in terms of vibration, seismic and thermal control for the resonant cavities is currently underway alongside the integration of the vacuum and the cryogenic systems. First science run is anticipated for late 2021/early 2022 with the coherent detection scheme where the axion-regenerated-photon is mixed with a local oscillator field. In this talk I will give an overview and status update on the ALPS II experiment, discuss the expected sensitivity of the initial science run, and the path forward to the targeted sensitivity and beyond. Progress on the complementary energy-based detection scheme with a transition edge sensor will also be reported.

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