

The International Axion Observatory (IAXO) and BabyIAXO (*)

Wednesday 26 March 2025 17:45 (15 minutes)

The International Axion Observatory (IAXO) is a next-generation axion helioscope aiming at a sensitivity to the axion-photon coupling down to $\sim 1.5 \times 10^{-12} \text{ GeV}^{-1}$, approximately 1.5 orders of magnitude beyond current helioscopes, across a wide mass range up to $\sim 0.25 \text{ eV}$. IAXO will probe QCD axions in the $1 \text{ meV} \sim 1 \text{ eV}$ mass range, where they could constitute all or part of the dark matter in the Universe, as well as a large part of parameter space that includes ALP dark matter candidates and other novel excitations at the low-energy frontier of particle physics. The collaboration is currently constructing BabyIAXO, as a preliminary step towards a full IAXO experiment. BabyIAXO will not only serve as a testbed for prototype magnet, X-ray optic, and detector systems, but also probe four times lower in axion-photon coupling than the current leading helioscope limits. In this contribution, we discuss the status of BabyIAXO and IAXO, as well as the anticipated science impact of each.

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Session Classification: SESSION 13: Direct detection: Technical Development-1