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Hunting solar axions and ALPs with the next-gen helioscopea IAXO and BabyIAXO[1] JULIA VOGEL, Lawrence Livermore Natl Lab, IAXO COLLABORATION[2] — Helioscopes are one of three major types of axion experiments and search for axions produced in the core of the Sun via the Primakoff effect. The International Axion Observatory (IAXO) is a next generation axion helioscope aiming at a sensitivity to the axion-photon coupling of 1 - 1.5 orders of magnitude beyond the current most sensitive axion helioscope which is the CERN Axion Solar Telescope (CAST). IAXO will be able to challenge the stringent bounds from supernova SN1987A and furthermore test the axion interpretation of anomalous white-dwarf cooling. Beyond standard axions, this new experiment will also be able to search for a large variety of ALPs and other novel excitations at the low-energy frontier of elementary particle physics. BabyIAXO is proposed as a first stage towards IAXO and aims at extending the sensitivity to axion-photon couplings down to a few 10^{-11} GeV^{-1}. Thus the experiment will deliver significant physics results while demonstrating the feasibility of the full-scale IAXO experiment by validating all subcomponents (magnet, optics, detectors, infrastructure). Here we introduce IAXO and BabyIAXO, report on the current status of both experiments and outline the expected science reach

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