

Exploring the Sun's core with BabyIAXO

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Axions are a natural consequence of the Peccei-Quinn mechanism, the most compelling solution to the strong-CP problem. Similar axion-like particles (ALPs) also appear in a number of possible extensions of the Standard Model, notably in string theories. Both axions and ALPs are very well motivated candidates for Dark Matter, and in addition, they would be copiously produced at the sun's core. A relevant effort during the last decade has been the CAST experiment at CERN, the most sensitive axion helioscope to-date. The International Axion Observatory (IAXO) is a large-scale 4th generation helioscope. As its primary physics goal, IAXO will look for solar axions or ALPs with a signal to background ratio of about 5 orders of magnitude higher than CAST.

In this talk I will briefly review astrophysical hints and models that we will be able to explore while searching for solar axions within the context of the IAXO helioscope search program, and in particular the physics under reach of BabyIAXO, and intermediate helioscope stage towards the full IAXO.

Reference to paper (DOI or arXiv)

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