

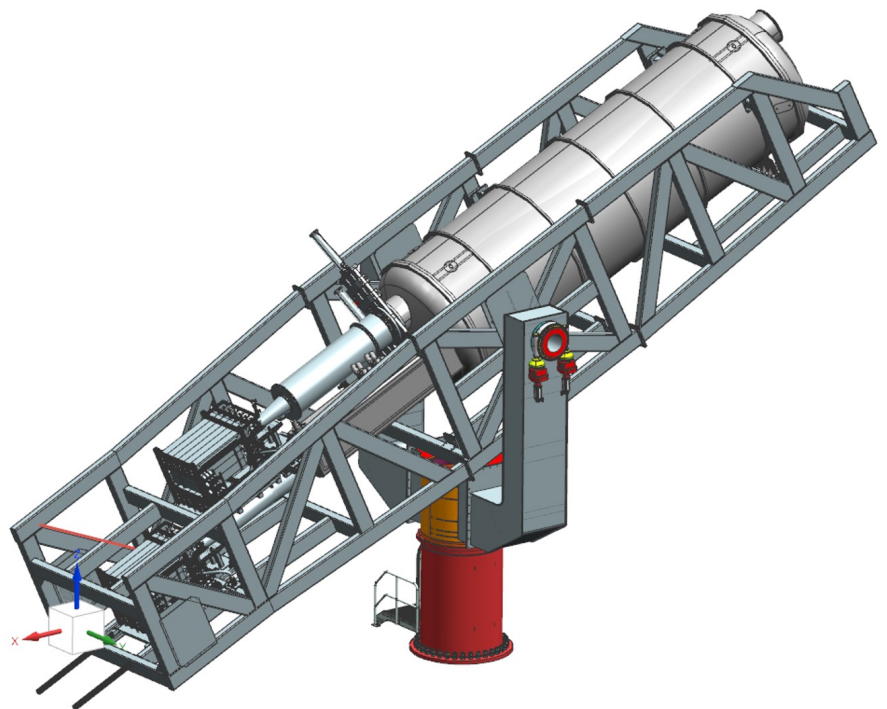


Searches for axions and other particles at the low mass frontier with (Baby)IAXO.

Tuesday, 21 February, 2023
Auditorium & Webcast 16:00

Igor Garcia Irastorza (University of Zaragoza)

In this seminar I will review the motivation, prospects and status of the BabyIAXO axion helioscope under preparation at DESY Hamburg, conceived as an intermediate stage of the International Axion Observatory (IAXO) and whose primary goal is the search for axions from the Sun with unprecedented sensitivity. 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 often invoked in models explaining inflation, dark radiation or trying to solve several astrophysical anomalies. Most relevantly, they are very well motivated candidates for the Dark Matter. If they exist axions and ALPs should be copiously produced at the Sun's interior in a rather model-independent way. In searching for them, BabyIAXO and later on IAXO will venture deep into unexplored axion parameter space, thus having discovery potential. I will briefly review the current efforts of the collaboration to build the various BabyIAXO subsystems: magnet, pointing structure, x-ray optics and detectors. I will then briefly review the recent work to extend the physics case of the experiment, by also addressing additional potential signals, like other solar axion production channels, supernova axions, dark photons or dark matter axions, among others. Some of these require adjustments or additions to the baseline hardware of the experiment. For example, the latter requires the implementation of large RF cavities optimally profiting from the large magnetic volume of the BabyIAXO magnet. These considerations show the potential of (Baby)IAXO as a multi-purpose facility for generic axion and ALP research in the future.



Coffee, tea and refreshments will be served at 15:30 in the foyer.

This is a HYBRID colloquium

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Meeting Password: 733220



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