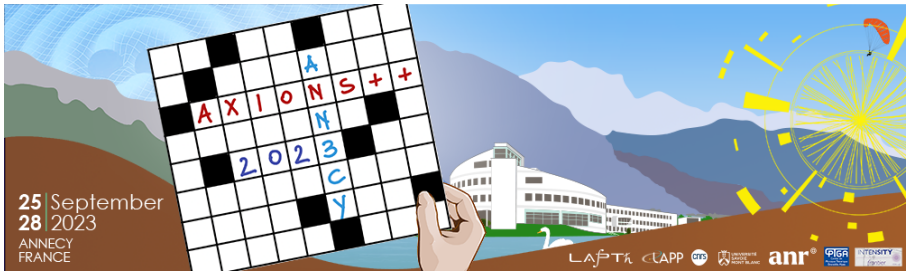

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Ray tracing for BabyIAXO with REST

mardi 26 septembre 2023 15:45 (20 minutes)

The helioscope experiment BabyIAXO, which will be the predecessor of IAXO (the International AXion Observatory), poses a lot of physical challenges regarding its components. The mounting precision of magnet, optics and detector as well as physical effects like gravitation and the size of vacuum tight windows have been studied with a ray tracer based on the REST (Rare Event Searches with TPCs) framework.
This Monte Carlo based simulation calculates the production probability of different axion models in the sun and generates the desired amount of events accordingly. For each of those axions, a path is calculated taking into account the coupling probability to photons in the inhomogeneous magnetic field, the reflection on the mirrors of the optics and the absorption in obstacles like flanges or vacuum tight windows.
This talk focuses on the calculations and considerations that went into the ray tracing as well as the acquired knowledge about the expected signal and the efficiency loss due to component displacements.

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