

ANAIS-112 experiment in the search for dark matter annual modulation: two years results

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Abstract

ANAIS (Annual modulation with NaI(Tl) Scintillators) is a direct detection dark matter experiment aiming at the confirmation or refutation of the DAMA/LIBRA positive annual modulation signal in the low energy detection rate, using the same target and technique. Other experiments exclude the region of parameters singled out by DAMA/LIBRA. However, these experiments use different target materials, so the comparison of their results depends on the models assumed for the dark matter particle and its distribution in the galactic halo. ANAIS-112, consisting of nine 12.5 kg NaI(Tl) modules produced by Alpha Spectra Inc., disposed in a 3 x 3 matrix configuration, is taking data smoothly at the Canfranc Underground Laboratory, Spain, since August, 2017. First results corresponding to 1.5 years are consistent with the absence of modulation, in contrast with the DAMA/LIBRA result. In this talk, after presenting the experimental set-up and performance, the 2 years annual modulation results from ANAIS-112 will be provided. These results support our projected goal of achieving a 3σ sensitivity to the DAMA/LIBRA result with 5 years of data taking.

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