

Status and Future Prospects of the search for Dark Matter Annual Modulation in NaI

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The annual modulation of the dark matter signal in direct detection experiments stands as one of the most promising distinctive signals for providing a positive detection. For over two decades, the DAMA/LIBRA experiment in the Gran Sasso underground laboratory has observed a modulation in its low-energy data that is compatible with that expected from Weakly Interacting Massive Particles (WIMPs) in the galactic halo. However, these results do not align with the negative outcomes from other direct detection experiments employing different target nuclei. To resolve this puzzle, it is imperative to replicate the DAMA experiment using the same target material (NaI). This objective is pursued by several experiments worldwide, two of which—ANAIS-112 and COSINE-100—have already yielded results narrowing down the interpretation of the DAMA signal as dark matter. In this presentation, I will review the current status and future prospects of these experiments.

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