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The FBI concept in the context of Ba-tagging for neutrinoless double beta decay events

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It has been recently shown that the identification of the single positively-charged ion Ba^{2+} produced in double beta decay events in Xe-136 may be possible in a high-pressure gas TPC using molecular indicators. The NEXT collaboration is pursuing an intense R&D program geared towards a future detector able to detect “tag” the Ba^{2+} produced in such events, a technique that could lead to an essentially background-free neutrinoless double beta decay experiment. In this talk, I will describe the R&D program of the NEXT collaboration. Particular emphasis will be given to the BOLD program, based on a new type of fluorescent bicolor indicators (FBI) capable of separating chelated indicators following Ba^{2+} capture from unchelated ones, with a very large signal to noise ratio.

Collaboration name

NEXT

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