

# Towards the tonne scale for the NEXT experiment

*Thursday 18 July 2024 20:40 (20 minutes)*

The NEXT collaboration uses a high-pressure gaseous time projection chamber with an electroluminescent amplification to search the neutrinoless double beta decay in Xe-136. The experimental program is built on solid and successful R&D, showing an excellent energy resolution ( $<1\%$ ) and remarkable topological discrimination. This prompts the tonne scale proposals for the technology in a phased approach. As a first stage, NEXT-HD, with 1 tonne of enriched xenon, would reach a sensitivity to the half-life of the process better than  $1e27$  within 5 years of operation. As a second phase, the implementation of an innovative technique of barium tagging would drastically reduce backgrounds and enhance sensitivity beyond the inverted mass ordering allowed region. This talk will cover the progress toward the large-scale phases of the NEXT project: prototyping plans and R&D, such as tracking readout technology, S1 detection, in-vessel electronics, and the current state of single-ion barium tagging.

## Alternate track

### I read the instructions above

Yes

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