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Study for rare processes in naturally occurring Zr isotopes using Cs_2ZrCl_6 crystal scintillators

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Recently, considerable interest has arisen in the development of crystal scintillators of the family of metal hexachlorides Cs_2MCl_6 (M = Hf or Zr) thanks to their exceptional properties: a high light yield (up to 40000 photons/MeV), good linearity in the energy response, excellent energy resolution ($< 3.5\%$ at 662 keV in the best configuration) and excellent pulse shape discrimination (PSD) between $\beta(\gamma)$ and α particles. In particular, we present here a first measurement using two Cs_2ZrCl_6 crystal scintillators ($\oslash\ 21 \times 21$ mm^2 each) which has been performed at the DAMA/CRYS setup of LNGS. These crystals have been studied in terms of their chemical purity and residual radioactive contaminants, scintillation and PSD performances. Preliminary studies on single beta decays of ^{96}Zr and double beta decays in isotopes of ^{94,96}Zr have also been carried out and shown.

Is this abstract from experiment?

Yes

Name of experiment and experimental site

DAMA/CRYS, LNGS

Is the speaker for that presentation defined?

Yes

Details

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Internet talk

No

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