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Type: **Poster**

Study of elpasolite crystals for neutron/gamma spectroscopy : a first step with CLLB:Ce

The spectroscopy of decay products is one of the three pillars of low-energy beam exploitation techniques produced by the ISOL method. Decay stations can be found in all facilities using the ISOL technique to produce radioactive beams, such as ALTO (France), ISOLDE (CERN), and IGISOL (Finland), as well as in future facilities like SPES (Italy) and DESIR (France), to name a few in Europe.

In the context of β decay, it is important to note that the total energy released during this process, denoted as Q_β , can exceed 10 MeV as we venture further from nuclear stability. At the same time, the energy required to remove a neutron (S_n) decreases, resulting in the emission of unbound neutron(s) alongside the expected γ -rays.

Elpasolite crystals containing ^{35}Cl such as CLYC:Ce represent a promising way to detect and discriminate both neutrons and γ -rays coming from such decay while measuring their energies. The ANR project SENSE (Scintillating Elpasolite for Neutron Spectroscopy Enhancement) aims to study such crystals using detailed Geant4 simulations in association with experimental measurements.

We started this project with a CLLB:Ce crystal in order to benchmark our procedure and Physics list. Our poster will present the results we have obtained and the on-going work that is performed at IJCLab.

Title

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Topic

Photosensors

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