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Status of and perspectives for the study of (alpha,n) reactions at CNA HISPANOS by means of activation and time-of-flight

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For the MANY collaboration.

Neutrons emitted from (alpha,n) reactions play an important role in several fields such as nuclear technology, nuclear astrophysics or underground (low background) physics. However, the current knowledge of the neutron yields and neutron energy spectra from (alpha,n) reactions is neither complete nor accurate; which has triggered a renewed interest in studying such reactions.
In this context, several Spanish research groups has established the MANY Collaboration that aims at measuring (alpha,n) reactions by means of activation, neutron counting and time-of-flight at the CNA HISPANOS (Seville) and CMAM facilities (Madrid).
The preliminary results of the recent experiment carried out at CNA HISPANOS for the study of the ²⁷Al(alpha,n) reaction by means of activation (using LaBr3 detectors) and by time-of-flight (using a pulsed beam and a Ej301 liquid scintillator module from the MONSTER array) will be presented. Then, the prospects for upgrades and future measurements will be discussed.

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