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Impact of (a,n) reactions on direct search of Dark Matter

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Accurate estimates of (a,n) neutron production rates, neutron energy spectra, and correlated gamma-rays are fundamental to understanding backgrounds in current and future rare-event studies. Neutrons are highly penetrating, and single scattering nuclear recoils produced by radiogenic neutrons can pose irreducible backgrounds to dark matter searches. Extensive and time consuming assay campaigns are necessary to measure the radiopurity of detector components and to identify low-background materials. In this talk, the problems posed by the (a,n) reactions in this field, the relevance of the (a,ng) process and the strategy for the calculation of this background are presented. The plans of the study group recently set up by several members of the dark matter and neutrino communities are also discussed.

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