

(α ,n) data for applications and detector simulation codes

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Knowledge on (α ,Xn) reactions is required in several fields:

- Nuclear structure. Most of our actual experimental knowledge on (α ,Xn) reactions comes from nuclear structure experiments between the 50's and the 70's. Nuclear technologies, non-proliferation and homeland security. α -emitters present in fresh/irradiated nuclear fuels can create a neutron source through (α ,Xn) reactions with (light) surrounding nuclei: fluorine, oxide and carbide fuels, vitrified nuclear waste...
- Determination of the ^{235}U enrichment.
- Analysis of irradiated fuels, MOX fuels and fuels enriched in MA.
- Neutron background in underground experiments (nuclear astrophysics, Dark Matter) due to radiogenic α -decay chains.

We will present some examples of applications and the SaG4n tool, a GEANT4-based parser that allows to perform realistic simulations of (α ,n) yields.

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