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

Wednesday, 10 November 2021 15:50 (25 minutes)

Knowledge on ( $\alpha$ ,Xn) reactions is required in several fields:

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

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

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