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The accuracy of gamma cascades for thermal neutron capture on gadolinium in Geant4

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Due to its extremely high absorption cross-section for thermal neutrons, gadolinium is widely used for passive shielding, neutron tagging, or even medical applications. A neutron capture on gadolinium is followed by an \sim 8 MeV gamma de-excitation cascade, which is usually easily detectable. In order to perform accurate Monte Carlo simulations for these purposes, the complex gamma cascades need to be well-known. In this talk, the de-excitation chains implemented in Geant4 v11.0.3 are compared to the accurate calculations done by Peter Grabmayr (1) in *MAURINA* as part of R&D for *LEGEND*.

(1) Grabmayr, P. Gamma cascades in gadolinium isotopes. Eur. Phys. J. C 83, 444 (2023).

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