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Radiation protection benchmark to test nuclear models between a nucleon within energy range 20 and 200 MeV and a light nucleus (C, N, O)

EURADOS has established that there is a weakness [1] in the nuclear model concerning the interaction of a nucleon with an energy of between 20 and 200 MeV with light nuclei, primarily carbon, nitrogen and oxygen. However, this type of interaction is fundamental for describing the transport of nucleons in the human body as in secondary dose calculation in protontherapy for example. This type of model is also fundamental for usual detectors simulation (as scintillators, Bonner sphere, etc.) and more generally in a wide range of simulations in the environment. A specific action has therefore been launched within the framework of Eurados [2] and the nuclear data community has been solicited for elementary interaction measurements within the High Priority Request List (HPRL) of the Nuclear Energy Agency (NEA). A request must also be made to theorists for build a coherent nuclear model.

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