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GEANT4 study of a BNCT applicable neutron beam achievement from compact DD, DT neutron generators

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An evaluation of the design of BSA for BNCT is discussed based on GEANT4 simulations. To create the realistic model by GEANT4 program there are inserted two physics lists for nuclear and electromagnetic reactions. The feasibility study describes the thermalization of neutrons from two different neutron sources based on DD, DT compact neutron generators.
In some cases, a multiplier, based on (n,2n) nuclear reactions, is used to increase the flux of thermal/epithermal neutrons. The selection of effective materials as moderators and reflectors playing the main role to get a proper neutron flux. Due to different types of neutron sources, BSA designs cannot be the same, but some materials are usable for all of them.
The comparison between different types of BSA used to find optimal materials, but the key role plays a neutron source to provide a usable neutron flux, which will be consistent with IAEA recommendations.

Collaboration

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