

DESIGN DEVELOPMENT OF DOUBLE-LAYER BEAM SHAPING ASSEMBLY USING EXTENSION NOZZLE TO INCREASE THE QUALITY OF EPITHERMAL NEUTRON BEAM AS A BORON NEUTRON CAPTURE THERAPY NEUTRON SOURCE

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| Abstract | Double layer beam shaping assembly (DLBSA) is a system that moderates fast neutrons into epithermal neutrons. The epithermal neutrons that leave the aperture in the DLBSA system are broadened in the space, thereby reducing the intensity and homogeneity of the epithermal neutron beams. Therefore, it is necessary to improve the design. The development of the DLBSA design was carried out using an extension nozzle. The nozzles are designed using materials made in three configurations, namely Ni+LiF load polyethylene, Pb+LiF load polyethylene, and Bi+LiF load polyethylene. The simulation results show that the addition of a nozzle at the tip of the DLBSA can channel the beam more directionally with high intensity. The addition of nozzles with Ni+LiF load PE material produces an epithermal neutron beam that meets the IAEA standards. |
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