

Passive shielding of the RED-100 detector in an experiment to study the CENNS process

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A combined passive shielding of the RED-100 two-phase emission detector has been developed and created, which provides protection from external gamma background and neutron background. The shield is a 5 cm thick copper layer (the inner layer is near the detector) and a water layer with a total thickness of ~ 70 cm. The shielding efficiency has been obtained via the Monte Carlo simulation. Also experimental verification in laboratory conditions using a NaI(Tl) scintillation detector has been done. So the calculated gamma-background attenuation coefficient for the copper shielding, and the complete shielding has been estimated at both approach.

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