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ОЦІНКА ПЕРЕРЕЗІВ ДЛЯ РАДІОНУКЛІДІВ, ЩО ВИКОРИСТОВУЮТЬСЯ В ПОЗИТРОННО-ЕМІСІЙНІЙ ТОМОГРАФІЇ, З ВИКОРИСТАННЯМ КОДУ EMPIRE 3.2.2 З РІЗНИМИ МОДЕЛЯМИ ЩІЛЬНОСТЕЙ ЯДЕРНИХ РІВНІВ

Представлено результати розрахунків поперечних перерізів для ядерних реакцій на природному хромі (^{nat}Cr) для деяких радіонуклідів, що використовуються в позитронно-емісійній томографії: ^{nat}Cr(d, x)^{52g, m+}Mn, ^{nat}Cr(d, x)⁵⁴Mn, ^{nat}Cr(d, x)⁵¹Cr та ^{nat}Cr(d, x)^{48V} з використанням статистичної ядерної програми EMPIRE 3.2.2 з різними моделями щільності ядерних рівнів. Результати порівняно з експериментальними даними, знайденими в літературі, і даними з різних електронних бібліотек TENDL.

Ключові слова: радіоізотопи Mn, позитронно-емісійна томографія, поперечні перерізи реакцій, ядерна медицина, код EMPIRE 3.2.2.

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EVALUATION OF CROSS-SECTION DATA FOR RADIONUCLIDES USED IN POSITRON EMISSION TOMOGRAPHY BY EFFECTS OF LEVEL DENSITY MODELS USING EMPIRE 3.2.2 CODE

This work presents the evaluated results of cross-sections for natural chromium (^{nat}Cr) with several nuclear reactions of ^{nat}Cr(d, x)^{52g, m+}Mn, ^{nat}Cr(d, x)⁵⁴Mn, ^{nat}Cr(d, x)⁵¹Cr, and ^{nat}Cr(d, x)^{48V} using the statistical nuclear model EMPIRE 3.2.2 code with different level density models, for some radionuclides used in positron emission tomography. We compared the results to data sets found in literature, and data chosen from various sets of the electronic TENDL library.

Keywords: Mn radioisotopes, positron emission tomography scan, cross-section, nuclear medicine, EMPIRE 3.2.2 code.

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