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CROSS SECTION AND NEUTRON YIELD FOR PROTON INTERACTION WITH INTERMEDIATE AND HEAVY NUCLEUS

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ABSTRACT

In this study reacting proton with intermediate and heavy nucleus as a target (^{64}Ni, ^{67}Zn, ^{75}As, ^{103}Rh, ^{111}Cd, ^{114}Cd, ^{165}Ho, ^{169}Tm, ^{186}W) the experimental data of cross sections have been published in Exfor library as a function of proton energy. We have calculated the cross section of the above mentioned data and results have been obtained by using (Matlab-8.3 2014a) program. The stopping powers have been calculated from Zeigler formula by using SRIM-2013 with the results of cross sections to calculate the neutron-yield for reactions, and also comparing between cross section for each one of those reactions with published experimental data of cross sections at Exfor library as a function of proton energy to show compatibility, as well as those reactions to be used in the production of radioisotopes such as (^{64}Cu, ^{67}Ga, ^{75}Se, ^{103}Pd, ^{111}In, ^{114m}In, ^{165}Er, ^{169}Yb, ^{186}Re), We also did found comparisons between neutron yields of the mentioned reactions to choose the best reactions of highest neutron yield.

KEYWORDS: Cross Section (Excitation Function), Stopping Power, Neutron Yield, Data Evaluation, Radioactive Isotopes