

# A study of the reaction $^{55}\text{Mn}(p,4n)^{52}\text{Fe}$ : excitation function and medical applications

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The present study concerns the medical applications and production of  $^{52}\text{Fe}$  via the reaction  $^{55}\text{Mn}(p,4n)^{52}\text{Fe}$  together with the reference reaction  $^{27}\text{Al}(p,x)^{22}\text{Na}$  employed in cross section measurements. Experimental excitation functions from threshold up to 200 MeV (see [1] and references therein) are compared with the predictions of the TALYS 1.95 code [2] and the semi-empirical formulas SPACS [3] and Silberberg & Tsao [4]. We obtained two TALYS parameter sets for the  $^{55}\text{Mn}(p,4n)^{52}\text{Fe}$  and  $^{27}\text{Al}(p,x)^{22}\text{Na}$  reactions which give a good description of the excitation functions for energies up to 85 MeV. Discrepancies observed at higher energies require further investigation. The semi-empirical formulas provide a good description of the excitation functions above 120 MeV.

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