$$\begin{cases} \Theta_{\rm SI}(E_{\rm R}) = \left(\dfrac{Z}{A}\right)^2 \left(\dfrac{2\mu_{\chi p}^2}{m_{\mathcal{N}} E_{\rm R}}\right) \left(\dfrac{E_{\rm R}\, \mathcal{G}_{\rm SI}(E_{\rm R})}{\mathcal{I}(E_{\rm R})}\right) \\ \Theta_{\rm SD}(E_R) = \dfrac{2}{3}\left(\dfrac{1}{A}\right)^2 \left(\dfrac{\bar{\lambda}_{\rm nuc}}{\lambda_p}\right)^2 \left(\dfrac{\mu_{\chi p}}{m_p}\right)^2 \end{cases}$$