

SPIN-DEPENDENT NEUTRALINO–NUCLEUS SCATTERING FOR $A \sim 127$ NUCLEI¹

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We perform nuclear shell-model calculations of the neutralino-nucleus cross section for several nuclei in the $A=127$ region. Each of the four nuclei considered is a primary target in a direct dark matter detection experiment. The calculations are valid for all relevant values of the momentum transfer. Our calculations are performed in the $3s2d1g_{7/2}1h_{11/2}$ model space using extremely large bases, allowing us to include all relevant correlations. We also study the dependence of the nuclear response upon the assumed nuclear Hamiltonian and find it to be small. We find good agreement with the observed magnetic moment as well as other observables for the four nuclei considered: ^{127}I , $^{129,131}\text{Xe}$, and ^{125}Te .

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