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Calculation of inelastic electron-nucleus scattering form factors of Si-29

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Abstract

Inelastic electron scattering form factors for Si-29 nucleus with total angular momentum and positive parity ($J(\pi)$) and excited energy ($3/2(+)$, 1.273MeV; $5/2(+)$, 2.028MeV; $3/2(+)$, 2.425 MeV and $7/2(+)$, 4.079 MeV) have been calculated using higher energy configurations outside the sd-shell. The calculations of inelastic form factors up to the first-and second-order with and without core-polarization (CP) effects were compared with the available experimental data. The calculations of inelastic electron scattering form factors up to the first-order with CP effects are in agreement with the experimental data, excepted for states $3/2(+)$ (1.273 MeV) and $5/2(+)$ (2.028 MeV) and without this effect are failed for all states. Furthermore, the calculations of inelastic electron scattering form factors up to the second-order with CP effects are in agreement with the experimental data for $3/2(+)$ (1.273 MeV) and $5/2(+)$ (2.028 MeV).

Keywords

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