

Spin-isospin excitations from the ground-state of ^{64}Ni

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Spin-isospin (Gamow-Teller) excitations in ^{64}Cu and ^{64}Co have been studied using $(^3\text{He}, t)$ and $(d, ^2\text{He})$ charge-exchange reactions on ^{64}Ni .

The $(^3\text{He}, t)$ experiment was performed at the Grand Raiden Spectrometer, RCNP, Osaka, with a 420 MeV ^3He beam. The complementary reaction, $(d, ^2\text{He})$, was studied at the Big-Bite Spectrometer, KVI, Groningen, with a 170 MeV deuteron beam.

As the isospin of the ^{64}Ni ground-state is $T_0=4$, states with $T=3, 4$ and 5 in ^{64}Cu are excited via the $(^3\text{He}, t)$ reaction and states with $T=5$ in ^{64}Co via $(d, ^2\text{He})$. If we assume that the nuclear interaction is charge symmetric, the $T=5$ states in ^{64}Cu should appear at corresponding excitation energies (if corrected for the Coulomb displacement) and with similar strengths as the $T=5$ states in ^{64}Co . These are the so called isobaric analogue states (IAS).

As in the ^{64}Cu spectrum the $T=5$ states are very weakly excited, only by combining the results of the two complementary experiments one can estimate the Gamow-Teller strength starting from ^{64}Ni in a consistent way.

To complete this study, spin-isospin excitations of $T=4$ and 5 states in ^{64}Ni will be investigated using the $^{64}\text{Ni}(p, p')$ reaction.

The results of these experiments will be presented.

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