

The ground-state g factor of ^{44}Cl : a probe for the reduced gaps at $Z=16$ and $N=28$

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Abstract

The g factor of the ^{44}Cl ground state is measured at the LISE fragment separator at the Grand Accélérateur National d'Ions Lourds (GANIL) using the β nuclear magnetic resonance technique, resulting in $g(^{44}\text{Cl})=(-)0.2749(2)$. An analysis of the g factor value and of the theoretical level scheme in the shell-model framework reveals the presence of odd-proton $s_{1/2}$ configurations and neutron excitation across the $N=28$ shell gap in the ground state of ^{44}Cl . In addition, the measured g factor strongly supports a 2^- spin assignment for the ^{44}Cl ground state.