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Abstract

Excited states of ^{69}Ga nuclei were populated by bombarding a ^{26}Mg target with a ^{48}Ca beam in a multinucleon transfer reaction. The experiment was performed using the ATLAS facility at Argonne National Laboratory. Gamma rays emitted following de-excitation were detected with the Gammasphere multi-detector array in kinematic coincidence with recoiling nuclei detected by the Fragment Mass Analyzer (FMA). We have analyzed the data from the Gammasphere multi-detector array to find previously unknown transitions for the ^{69}Ga nucleus. This data was analyzed with Radware gf3 data analysis software, which allowed us to see which gamma rays were emitted in coincidence with one another. These transitions were then used to construct a level scheme, which is a diagram that shows the energy states and transitions in the ^{69}Ga nucleus. The level scheme improves our understanding of the nuclear structure of ^{69}Ga and will contribute to ongoing research about the nuclear structure of neutron-rich nuclei.