MAGNETIC MOMENT OF ISOMERIC STATE OF ^{75}Cu MEASURED WITH HIGHLY SPIN-ALIGNED BEAM

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In the ^{75}Cu nucleus, the ground-state spin parity is changed from $3/2^-$ to $5/2^-$ as a result of the migration of the $5/2^-$ level along the Cu isotopic chain. The ^{75}Cu nucleus has two isomeric states at 62-keV and 66-keV excitation energies directly decaying to the ground state. They are expected to have spin parities of either $1/2^-$ or $3/2^-$, the latter of which is inherited from the ground state of ^{73}Cu. In order to identify the isomeric $3/2^-$ state, and then to investigate the shell evolution along the Cu isotopes, the magnetic moment of the isomeric $3/2^-$ state of ^{75}Cu was measured. The experiment was carried out at the BigRIPS at RIBF. By employing the two-step fragmentation scheme with momentum dispersion-matching, the ^{75}Cu beam with spin alignment reaching 50% was produced from a primary beam of ^{238}U via an intermediate fragment of ^{76}Zn. For the measurement of the magnetic moment, a method of time-differential perturbed angular distribution (TDPAD) was employed. Precession of the isomeric $3/2^-$ state was clearly observed with 5 sigma significance in an $R(t)$ ratio which represents a change of anisotropy of gamma-ray emission synchronized with the Larmor precession. The magnetic moment of the isomeric $3/2^-$ state identified was determined for the first time. In this presentation, the experimental results, the discussion on the shell evolution along the Cu isotopes, and the comparison of the properties between the ground $5/2^-$ state and the isomeric $3/2^-$ state of ^{75}Cu are given.