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Localized $5f$ antiferromagnetism in cubic UIn_3: ^{115}In-NMR/NQR Study H. SAKAI, S. KAMBE, Y. TOKUNAGA, H. CHUDO, Japan Atomic Energy Agency, Y. TOKIWA[1], D. AOKI[2], Osaka University, Y. HAGA, Japan Atomic Energy Agency, Y. ŌNUKI[3], Osaka University, H. YASUOKA, Japan Atomic Energy Agency — ^{115}In nuclear magnetic resonance (NMR) and nuclear quadrupole resonance (NQR) measurements have been performed on an antiferromagnet UIn_3 with the cubic $AuCu_3$-type structure. The NQR frequency (ν_Q) and Knight shift (K) of ^{115}In in UIn_3 have been estimated in the paramagnetic state from NMR experiments under applied field. The perpendicular component of transferred hyperfine coupling constant ($A_\perp$) has been deduced from scaled behavior of K to the static susceptibility (χ). Under zero field, the observation of the NQR spectrum has led to an estimated ν_Q of 11.8 MHz at 90 K. The temperature variation of the NQR relaxation rates ($1/T_1$) far above the Néel temperature T_N=88 K approaches a constant value, which indicates a localized nature for the $5f$- electrons in this system. On the other hand, in the antiferromagnetically ordered state at 4 K (well below T_N), the ^{115}In-NMR spectrum has been scanned over frequencies ranging from ∼20 to ∼70 MHz under zero applied field. From the analysis of the NMR spectrum, we propose that the direction of U moments in the AF state is neither $\langle 100 \rangle$ nor $\langle 111 \rangle$, but may be $\langle 110 \rangle$.

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