

Abstract Submitted
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Quadrupole Moment of ^{37}K ¹ K. MINAMISONO, P.F. MANTICA, H.L. CRAWFORD, J.S. PINTER, J.B. STOKER, R.R. WEERASIRI, NSCL/MSU, Y. UTSUNO, Japan Atomic Energy Agency/NSCL/MSU — The electric quadrupole coupling constant of the ground state of $^{37}\text{K}(I^\pi = 3/2^+, T_{1/2} = 1.22 \text{ s})$ in a tetragonal KH_2PO_4 single crystal was measured to be $|eqQ/h| = 2.99 \pm 0.07 \text{ MHz}$. The experiment was performed at NSCL using a newly-developed β -ray detecting nuclear quadrupole resonance system. The electric quadrupole moment of ^{37}K was determined to be $|Q(^{37}\text{K})| = 10.6 \pm 0.4 \text{ e fm}^2$, where the known electric quadrupole coupling constant of stable ^{39}K in the KH_2PO_4 crystal [1] was used as a reference. The present experimental result is consistent with but more precise than the previous value ($11 \pm 4 \text{ e fm}^2$) measured by laser spectroscopy [2]. The present result is larger than that predicted by shell-model calculations in the *sd* or the *sd* and *fp* model spaces. Evaluation of effective charges in this region of the chart of nuclides will be presented as one means to reconcile the discrepancy between experiment and theory. [1] J. Seliger, V. Zagar, Phys. Rev. B 49, 14918 (1994). [2] J. A. Behr et al., Phys. Rev. Lett. 79, 375 (1997).

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