Erratum: Quadrupole Deformation of the Self-Conjugate Nucleus ^{72}Kr [Phys. Rev. Lett. 95, 022502 (2005)]

A. Gade, D. Bazin, A. Becerril, C. M. Campbell, J. M. Cook, D. J. Dean, D.-C. Dinca, T. Glasmacher, G. W. Hitt, M. E. Howard, W. F. Mueller, H. Olliver, J. R. Terry, and K. Yoneda

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The electromagnetic excitation strength $B(E2; 0_1^+ \rightarrow 2_1^+) = 4997(647)e^2$ fm^4 in the $N = Z$ ^{72}Kr has been derived from the Coulomb-excitation cross section under the assumption that 100% of the ^{72}Kr ions are in the ground state. This is possibly the source of an additional systematic error since ^{72}Kr has a 0^+ shape isomer [mean lifetime $\tau = 38(3)$ ns] as the lowest excited state [1]. The amount of ^{72}Kr produced in the isomeric state, the isomer ratio R_I, was not measured in the present experiment. While for neutral ^{72}Kr atoms the flight time from the production target to the Coulomb-excitation target would have been sufficient to neglect a possible isomeric component in the beam, the decay by internal conversion is blocked to first order for fully stripped ions as were available in the experiment under discussion. An isomer ratio R_I in the beam would lead to an underestimation of the $B(E2; 0_1^+ \rightarrow 2_1^+)$ value by a factor of $(1 - R_I)$ and to an underestimation of the deduced quadrupole deformation parameter β by a factor of $\sqrt{1 - R_I}$. The statement that our result is in agreement with the presented shell model Monte Carlo calculations stays valid up to an isomeric ratio of $R_I = 0.2$. The statements that our result agrees with the oblate solution of [2,3], and calculations with NL3 and TM1 parameter sets of [4] remain valid for $R_I = 0.007$, $R_I = 0.07$, $R_I = 0.17$, and $R_I = 0.185$, respectively.

At GANIL, the population of the 0^+ shape isomer in ^{72}Kr produced by projectile fragmentation of ^{78}Kr on a ^{9}Be target—the same projectile-target combination as in our experiment—was found to be 5.5(12)(7)% at 73 MeV/nucleon [5]. However, in our experiment, the beam energy was 140 MeV/nucleon. The population mechanism is not well understood and isomeric ratios may differ depending on the beam energy. In two other cases the population of low-lying 0^+ isomers in fast fragmentation has been reported and was found to be small as well, 2% for ^{68}Ni [6] and $<0.16(3)$% in ^{74}Kr [7].

We thank C. J. Lister and D. G. Jenkins for bringing this oversight and its potential for further studies to our attention. We agree with their assessment that measuring the presently unknown isomeric ratio under identical experimental conditions would help reduce the additional experimental uncertainty in the Coulomb-excitation cross section of ^{72}Kr.

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