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Magnetic Moment of the Core Excited Isomer of $[(\pi h_{9/2}^2)8^+ \times 5^-(^{208}\text{Pb})]13^-$ in ^{210}Po

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The isomeric state of 93-nsec half life found in the $^{208}\text{Pb}(\alpha, 2n)^{210}\text{Po}$ reaction[1] was interpreted by Blomqvist *et al.*[2] as the state arising from $(\pi h_{9/2}^2)8^+$ coupled to the 5^- state of the ^{208}Pb core (see the level scheme in Fig. 1). In order to test this assignment we measured the magnetic moment of this isomer by the time-differential-spin-rotation method. A metallic ^{208}Pb target was bombarded with 33-MeV α particles from the IPCR cyclotron. A time-differential pattern is shown in Fig. 2. The experimental result is

$$g = 0.546 \pm 0.012.$$

Assuming the configuration of $[(\pi h_{9/2}^2)8^+ \otimes 5^-(^{208}\text{Pb})]13^-$ we expect

$$g = \frac{8}{13}g(8^+, {}^{210}\text{Po}) + \frac{5}{13}g(5^-, {}^{208}\text{Pb})$$
$$= 0.565 \pm 0.011,$$

where we used $g(8^+, {}^{210}\text{Po}) = 0.901 \pm 0.013$[3] and $g(5^-, {}^{208}\text{Pb}) = 0.027 \pm 0.007$.[4] The present experimental result agrees with this value and is consistent with the interpretation by Blomqvist *et al.*[2]

References

1) T. Yamazaki: Phys. Rev. **C1** (1970) 290.
2) J. Blomqvist, D. Fant, K. Wikstrom and I. Bergstrom: Physica Scripta **3** (1971) 9.
3) S. Nagamiya, Y. Yamazaki, O. Hashimoto, T. Nomura, K. Nakai and T. Yamazaki, presented at this conference (1972) III-21.
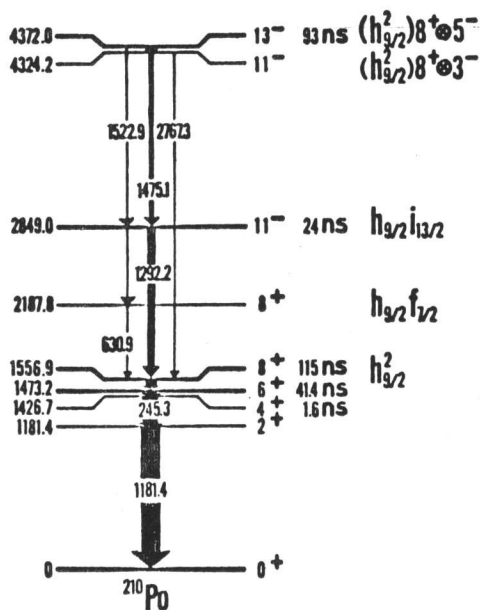4) J. D. Bowman and S. C. Zawislak: Nuclear Phys. **A138** (1969) 90.

Fig. 1. Levels of ^{210}Po strongly populated in the ^{208}Pb (α, 2n) reaction.
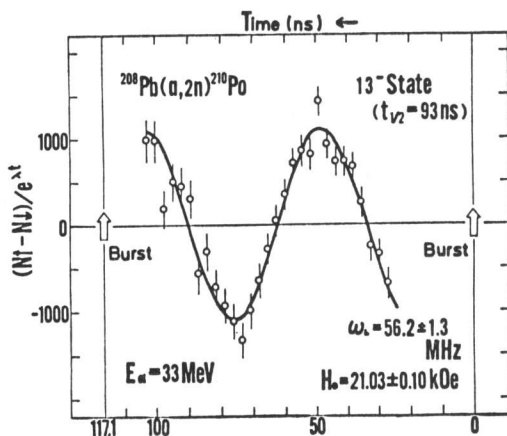

Fig. 2. Time-differential pattern of the normalized difference $R(t) \equiv (N\uparrow - N\downarrow)/\exp(-\lambda t)$, where counts $N\uparrow$ and $N\downarrow$ correspond to the external magnetic field up and down, respectively, and λ is the decay constant of the present 13^- state.