with a spin of 3 for the level.[31] The assignment of spin 0^+ for Ga^{66} would be more favorable in this case, but then there is a discrepancy in the beta decay to the ground state.

If Ga^{66} is 1^-, then it is possible to assign spins of 1^- to all of the Zn^{66} states above 2.40 Mev, and this would agree with Glaubman's recent proposal[32] that low lying levels of even-even nuclei have odd spin if the parity is odd, and even spin if the parity is even. The greatest objection to this would be the assignment of 1^- to the 3.78- and 3.24-Mev levels which decay predominantly to the 1.04-Mev level. Odd parity for Ga^{66} would not agree with the shell model prediction $P:P_{\frac{3}{2}}$ $N:(p_{\frac{3}{2}})^4(f_{\frac{5}{2}})^3$ or $(p_{\frac{3}{2}})^3(f_{\frac{5}{2}})^4$ (P: proton configuration, N: neutron configuration).

[31] It would be very unusual if this spin is not 2. Furthermore, the lifetime of this level has been found to be $<5\times10^{-9}$ sec which makes a spin >2 very unlikely. [Roderick, Meyerhof, and Mann, Phys. Rev. **84**, 887 (1951).]

[32] M. J. Glaubman, Phys. Rev. **90**, 1000 (1953).

It does not seem possible to say anything conclusive about the states above 1.04 Mev without internal conversion and angular correlation data.[33]

ACKNOWLEDGMENTS

The authors are indebted to Professor Eugene Feenberg for helpful discussions regarding the shell structure of these nuclei. We also wish to thank Professor Preiswerk and Dr. Mukerji for correspondence during the course of the work and for sending us some of their data and copies of their results prior to publication. The assistance of Lloyd Chase in taking data was greatly appreciated.

[33] Mukerji and Preiswerk mention an (unpublished) angular correlation measurement of the 2.75–1.04-Mev gamma cascade which was inconclusive because of unknown contributions to the coincidences due to weaker components. An accurate measurement of this angular correlation could determine whether the 3.78-Mev level has spin 0 or 2. If this spin is 2 then the possibility of spin 0 for Ga^{66} must be ruled out because of the allowed beta transition to the 3.78-Mev state of Zn^{66}.

PHYSICAL REVIEW VOLUME 92, NUMBER 6 DECEMBER 15, 1953

Half-Life Determination of Po^{210} by Alpha Counting*

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(Received August 31, 1953)

A half-life of 138.374 ± 0.032 days for polonium-210 was determined by alpha counting a sample of approximately 0.5 millicurie over a period of 328 days.

THE National Bureau of Standards[1] lists two values for the half-life of Po^{210}: 140 days as determined by Curie[2] by gamma counting, and 138.3 days as determined by Beamer and Easton[3] by calorimetry. Alpha counting affords an entirely different method of determining the half-life, and requires only a small amount of activity. Therefore, for comparison, a half-life determination by alpha counting was undertaken, with a sample of approximately 0.5 millicurie of Po^{210}.

The counting instrument chosen was the Logac,[4] a low-geometry alpha counter chosen for its stability and low-coincidence loss. It consists of a low-geometry attachment used with a methane-flow proportional alpha counter. The sample was kept in the counting chamber throughout the experiment, so that no changes in geometry could occur.

The sample was pipetted from a solution of purified Po^{210} in nitric acid onto a glass slide. Mica, weighing 0.92 mg/cm², was cemented over the sample to prevent migration of activity from the slide. Tests made by adding air to the evacuated counting chamber and counting at varying air pressures showed that the sample was sufficiently thin that no counts were lost by absorption or would be lost by diffusion into the glass.

Over a period of 328 days, 81 measurements were made. Each measurement was of sufficient duration to total at least 500,000 counts, to reduce the statistical probable error to 0.1 percent per measurement. No geometry factor was used, since the decay could be followed from the counting rate.

A least-squares analysis of the data gave a half-life of 138.374 days which compares favorably with the Beamer and Easton value. The probable error in the determination was 0.032 day or 0.02 percent, as compared with 0.1 percent by Beamer and Easton.[3]

* Operated by Monsanto Chemical Company under a U. S. Atomic Energy Commission contract.

[1] *Nuclear Data*, National Bureau of Standards Circular No. 499 (U. S. Government Printing Office, Washington, D. C., 1950), p. 247.

[2] M. Curie, J. phys. et radium (6) **1**, 12 (1920).

[3] W. H. Beamer and W. E. Easton, J. Chem. Phys. **17**, 1298 (1949).

[4] Rose, DeBenedetti, Heyd, Pittenger, Powers, Brenneman, and Curtis, Mound Laboratory Final Report No. 47, M-270, 1947 (unpublished).