G. W. Ludwig and H. H. Woodbury for communicating their results to us.

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GAMMA WIDTH IN Be^8 PERTINENT TO A TEST OF THE CONSERVED VECTOR CURRENT THEORY*

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In a recent experimental test[1] of the conserved vector current theory of β decay it was found that the predicted $(\beta - \alpha)$ angular correlations are not observed in nuclei of mass 8. The only way this might happen and still be consistent with the theory is for the $M1$ transition width Γ_{M1} to be anomalously small between the states $(J=2, T=1)$ and $(J=2, T=0)$ in the nucleus Be^8.

The quantity Γ_{M1} enters into the predicted asymmetry coefficient for the $(\beta - \alpha)$ correlation in the form $(\Gamma_{M1})^{1/2}$. Since the $(J=2, T=1)$ level decays by α emission rather than γ emission, Γ_{M1} is not known experimentally. In the prediction[2] of the $(\beta - \alpha)$ asymmetry, a probable width of $\Gamma_{M1} = 0.15$ Weisskopf unit ≈ 8 ev was assumed.

In those cases in which a comparison has been made between experiment and calculations with the intermediate-coupling model, it is found that the computed $M1$ widths are fairly reliable. The results of calculating the Γ_{M1} pertinent to the present experiment with intermediate-coupling functions are given in Table I. Since other evidence[3] suggests that for Be^8 the intermediate-coupling parameter (a/K) lies between 2.0 and 2.5, the calculation indicates that

$$\Gamma_{M1} \approx 3 \text{ to } 5 \text{ ev}.$$

Table I. Gamma transition width Γ_{M1} for the $(J=2, T=1)$ to $(J=2, T=0)$ transition in Be^8 as a function of the relative strength of spin-orbit coupling, a/K.

a/K	0	1.5	3.0	4.5	6.0
Γ_{M1} (ev)	0	2.0	7.4	14.8	23.4

Such a value would multiply the predicted asymmetry in the $(\beta - \alpha)$ correlation by about 0.7, and thereby give a theoretical estimate of about +0.10, where the sign is determined by the positive sign of the computed matrix element. The experimental result[1] is $+0.02 \pm 0.04$. Therefore the present calculation indicates that the discrepancy between experiment and the conserved vector current theory of β decay is real.

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