In the activated condition the band boundaries may be nearly straight lines. The small rise at the beginning of the curves for diamond Q may have a similar origin; a slight smoothing out of the energy bands would temporarily predominate over the effect of space charge, especially when the applied field is one of saturation.

We wish to thank Mr. Louis Small, president of Service Diamond Tool Company for his cooperation in supplying these diamonds.

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Beta-Spectrum of Be^{10}*

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THE scintillation spectrometer[1,2] has been used to determine the beta-spectrum of Be^{10}. The sample was made by activating Be in the pile and then enriching the sample in Be^{10} by magnetic separation at *Y*-12. The results obtained confirm the earlier result reported at the 1949 Washington meeting of the Physical Society.

Approximately 1.5 milligrams of BeO were mounted on 100 microgram per cm² Formvar film; the area was about 3 cm². An anthracene crystal was used with an RCA-5819 photo-multiplier. The pulse height distribution is shown in Fig. 1. The sample activity was so large that the background was negligible. Our first sample separated from a cyclotron target had a specific activity of 18 disintegrations per second per milligram of Be. The pile sample after electromagnetic enrichment had a specific activity of 855 disintegrations per second per milligram of Be.

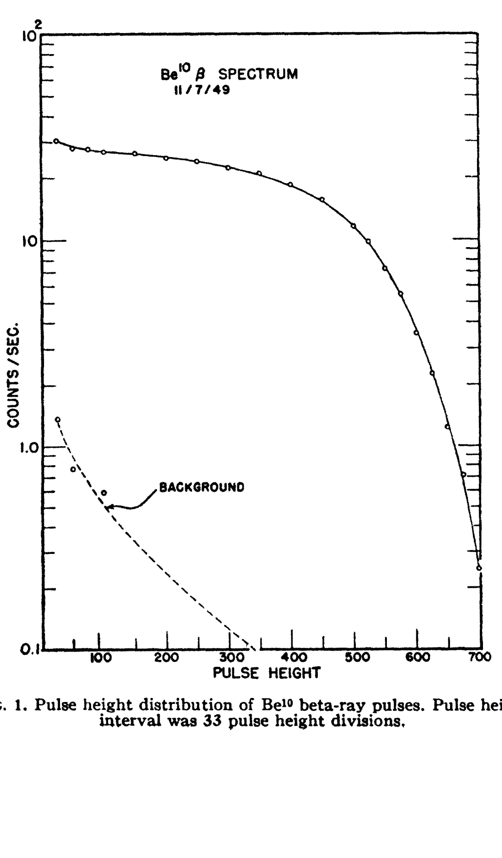

FIG. 1. Pulse height distribution of Be^{10} beta-ray pulses. Pulse height interval was 33 pulse height divisions.

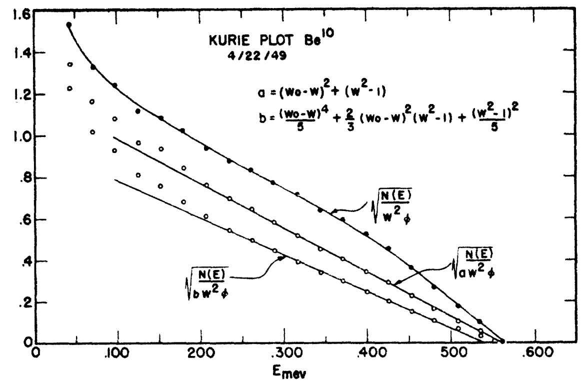

FIG. 2. Kurie plot of cyclotron Be^{10}. Sample thickness about 2 mg/cm² on 0.5 mg/cm² polyethylene.

Figure 2 shows the Fermi-Kurie plots reported previously. It was not possible to decide whether the first or second forbidden axial vector or tensor correction gave the best approach to a straight line near the end point. Figure 3 shows the results obtained with the present sample. It is now possible to see that the second forbidden correction gives the best fit, as is expected theoretically. The strong turn-up at low energies is found generally with the scintillation spectrometer and is probably due to scattering out from the crystal. The maximum energy of the beta-ray as given by the corrected Kurie plot is 0.535±0.02 Mev for the original sample and 0.545±0.010 Mev for the more active sample. The more precise value agrees with other recent measurements.[3,4]

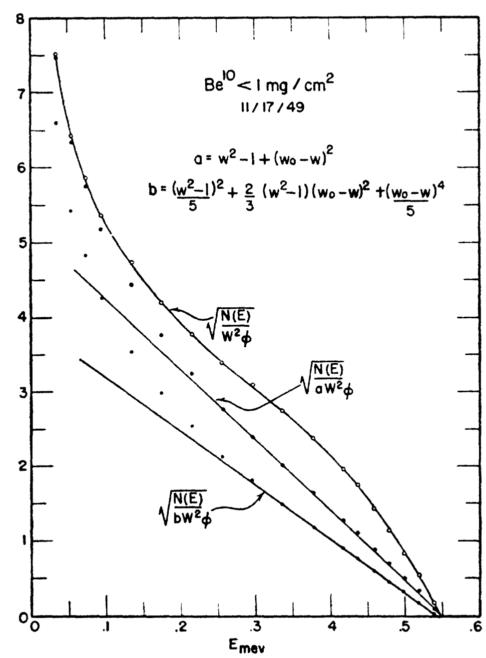

FIG. 3. Kurie plot of pile activated and electromagnetically separated Be.

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