knowledge of the branching ratio of Zn^{62} decay where the decay might take place to two states separated by 41.8 kev. This would be difficult to determine without experimental knowledge of the conversion coefficient. The Cu^{62} has a $f\tau_{\frac{1}{2}}$ value of 13.4×10^4 and Zn^{62} has a $f\tau_{\frac{1}{2}}$ value of 5.3×10^4 (taking into account the decay by K-capture and positron emission) which classifies both spectra as allowed.

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The Sn^{117} Isomeric Activity

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THE 14-day tin activity has recently been assigned to Sn^{117} by Mihelich and Hill[1] and by Mallary and Poole[2] who activated electromagnetically enriched isotopes of tin with slow neutrons.

A sample of Sn^{117} of high specific activity was prepared for observation in a magnetic lens spectrometer by bombarding a thick target of antimony with 100-Mev deuterons in the 184-inch Berkeley cyclotron. The Sn^{117} activity was separated from the antimony target by selective precipitation as sulfides thus requiring the addition of a relatively large amount (5 mg) of tin carrier. A source was prepared by mounting the SnS_2 on a Formvar film backing so that the total source thickness was about 1 mg/cm^2. The observed spectrum is shown in Fig. 1. Two conversion peaks are present at 127.0 and 152.5 kev corresponding to the K and L conversion for a transition with an energy of 0.157 ± 0.002 Mev. This value is slightly smaller than the value of 0.159 Mev obtained by Mihelich and Hill.

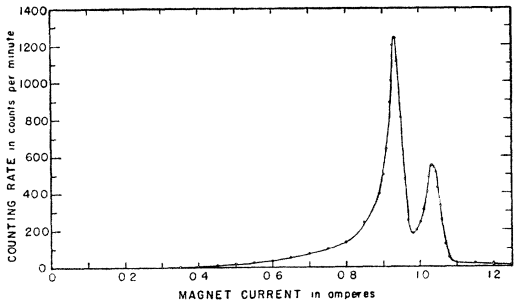

FIG. 1. The observed spectrum of conversion electrons from Sn^{117} before correction for the finite resolution of the spectrometer.

From the half-life of 14 days and the energy of 0.157 Mev the transition corresponds to a transition of order five according to the classification of Axel and Dancoff.[3] The experimental ratio of the number of K and L conversion electrons is 2.2 taking into account the resolution of the spectrometer. With a value $l=5$ the theory of Hebb and Nelson[4] gives 0.95 as the theoretical K/L ratio for electric transitions and 2.85 for magnetic transitions. With $l=4$ the theoretical K/L ratio is 3.84 for magnetic transitions. Therefore in order to account for the experimental value of the K/L ratio, a mixture of 2^5 pole electric and 2^4 pole magnetic radiation must be postulated.

The author wishes to thank Professor A. C. Helmholz for helpful discussions during the course of the experimental work described in this and the preceding letter and also to thank the Radiation Laboratory of the University of California for making some of their facilities available to him.

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Magnetic Resonance in Antiferromagnetic Materials near the Curie Temperature*

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AN investigation[1,2] has been made of the magnetic resonance absorption of an antiferromagnetic material. Cr_2O_3 was selected for the initial experiments because it is a stable compound that has a Curie point at a convenient temperature. Honda and Sone[3] have reported a Curie temperature of 34°C for Cr_2O_3 while Foex and Graff[4] gave a higher value of 47°C.

The material was introduced into a rectangular cavity which formed one arm of a microwave bridge. The absorption was obtained by measuring the change of intensity of the reflection from the cavity which was slightly mismatched with respect to the line A d.c. magnetic field was set perpendicular to the microwave magnetic field. The procedure followed was to hold the frequency constant at 9300 Mc and sweep the d.c. magnetic field through the resonance peak at various temperatures, ranging from 150°C to liquid air temperature. A small field-dependent absorption has been eliminated from the data given below. We obtain, as a function of the temperature, the height of the absorption peak (h), and the value of the d.c. magnetic field (H_0) at the point of resonance.

We have found that h varies with the temperature of the powdered sample as shown by Fig. 1. It is noticed that h decreases abruptly at about 38°C indicating a drastic change in the nature of the absorption. Through the paramagnetic range, H_0 was constant at approximately 3450 oersteds.

Magnetic susceptibility measurements[5] made on the sintered Cr_2O_3 used are shown in Fig. 2. It is noticed for this material that the Curie temperature is 38°C, close to the point where the break in the resonance absorption occurs. It is believed, therefore, that the sudden decrease in the resonance absorption can be attributed to the change of Cr_2O_3 from the paramagnetic to the antiferromagnetic state.

The amount of absorption occurring below the Curie temperature depended upon the nature of the material. When the Cr_2O_3 was in a powdered form two absorption peaks were found. H_0 for one peak was independent of temperature and equal to the value found in the paramagnetic region. H_0 for the second peak decreased as the temperature decreased as illustrated in Fig. 3. At -64°C the two peaks are well resolved, occurring at 3450 and 660 oersteds, respectively. When the Cr_2O_3 was prepared as

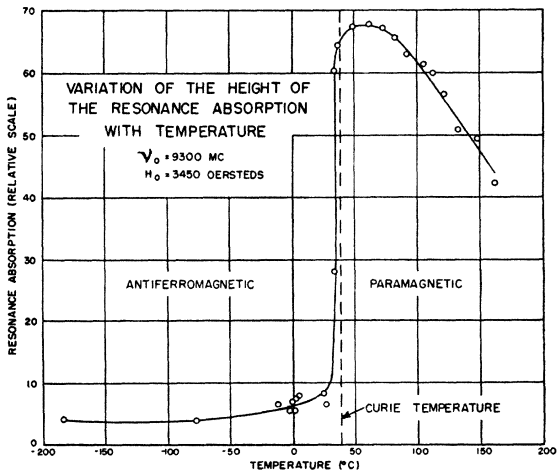

FIG. 1. Variation of the height of the peak (h) of the resonance absorption with temperature of powdered Cr_2O_3. The vertical broken line indicates the Curie point as determined by an independent measurement of the paramagnetic susceptibility on the sintered material investigated.