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Ground-State Electronic Structure of Erbium and Nuclear Spins of Er^{169}, Er^{171}, and Gd^{159}.* AMADO Y. CABEZAS, INGVAR P. K. LINDGREN,** AND RICHARD MARRUS, Lawrence Radiation Laboratory and Department of Physics, Berkeley, California. --Atomic-beam magnetic resonance studies of neutron-activated erbium and gadolinium have yielded three nuclear spins. These are Er^{169}(I=1/2), Er^{171}(I=5/2) and Gd^{159}(I=3/2). These measurements are in agreement with the assignments made from beta-ray spectroscopy and with the level diagram proposed by Nilsson.[1] Measurements of the erbium spins were made by observing the Zeeman transitions in a state characterized by J = 6 and g_J = 1.164(5). It is inferred that this state almost certainly arises from almost pure L-S coupling among the electrons of the configuration $(4f)^{12}$ $(6s)^2$ to the Hund's Rule ground state $^3H_6$. Observations of gadolinium resonances weremade in the five J states arising from the ground state ^9D. The observed resonances are in agreement with g_J values previously measured.[2]

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[1] S. G. Nilsson, Kgl. Danske Videnskab. Selskab Matt.-fys. Medd. 29, No. 16 (1955).

[2] K. F. Smith and I. J. Spaulding (Cambridge University, Cambridge, England), private communication.

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