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A. de-Shalit, Phys. Inst. der ETH., Zürich.

It is well known that a single particle model of the nucleus requires that the magnetic moments of the odd nuclei will lie on one of the two Schmidt lines in a plot of μ vs. I. Although the experimental points seem to be concentrated around these two lines, the deviations are considerable, and in such a way that they all lie in between the two lines.

The Schmidt lines are obtained by taking as the g_s-factor the experimental value for a free nucleon. By taking for the g_s-factor the value predicted by the Dirac-equation new lines are obtained — the Dirac lines.

Inspection of the experimental data shows that all known magnetic moments, with two exceptions, fall in one of the two regions defined by the Schmidt lines and those of Dirac. That is, if one defines the effective g_s^{eff} so as to obtain the observed nuclear magnetic moments, and if g_s^D and g_s^{ex} are the nuclear g-factors which one gets by using as magnetic moments of the nucleons the Dirac-values or those of the free particles respectively, it is found that:

$$0 \leqslant \frac{g_s^{eff} - g_s^D}{g_s^{ex} - g_s^D} \leqslant 1.$$

Of the two exceptions, As^{75} could still fit if one takes into account the rather big experimental error in its magnetic moment; the other one is I^{127}.

It is thus possible that the deviations from the Schmidt lines could be explained by assuming that the abnormality in the g-factor of the free nucleons, which probably comes from their additional mesonic field, is reduced when the nucleons are bound to the core.

Another indication in favour of such an explanation, as pointed out by Mr. I. Talmi, is to be found in the odd-odd nuclei. In fact it is easily seen that if the odd proton and the odd neutron have the same spin and parity, it is expected that the corrections in the g_s factors will just cancel each other, and the experimental values will fit with those calculated with the free-nucleon value of g_s

(B^{10}, N^{14}, Na^{22}), whereas in the other case experimental and calculated values could differ considerably (K^{40}).

The absence, or at any rate the extreme scarcity, of magnetic moments between the Dirac lines as compared with the dense filling of the spaces between these lines and those of Schmidt, could thus be explained by the above asumption.

Note: After this remark was completed it was learned from Prof. Weisskopf that Prof. Bloch has recently suggested similar ideas. As the present remark grew up independently, it was found useful to publish the above arguments.