results[2] that in a majority of cases where an origin is present, the tracks appear to be coplanar with it, within the rather limited accuracy of measurement.

* Assisted in part by the joint program of the ONR and AEC.
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Erratum: The Angular Correlation Theorem and the Elimination of Interference Terms

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EQUATIONS (3) and (5) should read as follows:

$$(e_1|\rho|e_2)=NS_1(i|H_1|e_1)^*(i|H_1|e_2), \quad (3)$$

$$S_1(i|H_1|e_1)^*(i|H_1|e_2)=0 \quad (e_1\neq e_2). \quad (5)$$

Neutron-Proton Scattering with Repulsive Forces

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THE neutron-proton scattering at 90 and 260 Mev has been calculated using central forces and a square well with an impenetrable inner sphere. The radius of the sphere was varied between the limits 0 and 1.2×10^{-13} cm and the depth of the well between 38 and 140 Mev. The low energy scattering could be made to agree with experiment within wide ranges of the hard sphere radius and well depth. At 90 Mev the neutral total cross section varied between 0.20 and 0.28 barn, whereas the cross sections for the charged and symmetric theories could be brought in agreement with the experimental value of 0.079 barn. (These theories were considered in order to be able to compare results with earlier calculations.) The angular distribution was in poor agreement with experimental values, being much the same as those obtained for an ordinary well.

At 260 Mev the cross sections obtained were much too large, being about three times the experimental value of 0.038 barn. For the charged and symmetric theories the cross sections were generally larger than the corresponding values at 90 Mev. This increase of the cross sections with increasing energy was caused by too rapid an increase of the *P*- and particularly the *D*-phases. The effect is explained by the fact that the attractive outer region must be made much stronger for a model with a repulsive core than for an ordinary well, and the phase-decreasing effect of the repulsive core will be comparatively unimportant for the *P*- and *D*-phases. If the radius of the inner core is further increased, the depth of the outer region must be increased too in order to maintain low energy agreement, but the effect of the inner core will be more pronounced so that the *S*-phase will become negative. Negative *S*-phases will give angular distributions having maxima at 90° in contradiction with the U-shaped distribution expected from experiment.[1]

The conclusion from these considerations is that a strong repulsion can hardly be present in the neutron-proton interaction in triplet states of even parity.

The possibility of introducing repulsive forces into the proton-proton interaction has recently been investigated by Jastrow,[2] and later investigations have been extended also to the neutron-proton case.[3] Jastrow reports reasonable agreement with available experimental data, but the repulsion used is assumed to have negligible range in the triplet states. It seems strange to us that, if a repulsion is really present, it should be so strongly spin-dependent.

The investigations related above were carried out on a suggestion by Professor O. Klein, to whom I wish to express my gratitude.

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The Magnetic Moment of S^{33}

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EMPLOYING the nuclear induction spectrometer described earlier by Proctor,[1] signals of S^{33} with a natural line width of about one gauss were detected in chemically pure CS_2. The resonant frequency was compared with that of N^{14} in a 3.2 normal solution of HNO_3 with the result

$$\nu(S^{33})/\nu(N^{14})=1.06174\pm0.00013. \quad (1)$$

Using the known magnetic moment[2] of N^{14} and the fact that the spin of S^{33} is $\frac{3}{2}$,[3] the value of the magnetic moment was found to be

$$\mu(S^{33})=+0.64292\pm0.00014. \quad (2)$$

The positive sign in Eq. (2) was verified by comparing the sign of the S^{33} signal with that of N^{14} and H^2. In the case of H^2 a careful comparison of signal magnitudes was also carried out and within the experimental error gave a result consistent[4] with the spin and natural abundance (0.74 percent) of S^{33}. The earlier determination of $\mu(S^{33})=0.632\pm0.010$ nm by Eshbach, Hillger, and Jen[5] is in agreement with the more precise value of Eq. (2).

Signals of S^{33} were not observed in other liquid sulfur compounds. This was probably due to the fact that the line widths, resulting from quadrupole[6] effects, were too broad.

We would like to express here our gratitude to Professor Felix Bloch for many helpful consultations during the course of this work.

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The Reactions of He^3+He^3

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THE following reactions can be expected to compete when He^3 is captured by He^3:

$$He^3+He^3\rightarrow He^4+H^1+H^1+12.82, \quad (1)$$

$$He^3+He^3\rightarrow Li^5+H^1+11.02 \text{ Mev} \quad (2)$$

$$\downarrow$$

$$He^4+H^1+1.8 \text{ Mev}.$$

Three μa of He^{3+} at 300 kev were obtained by accelerating a mixture of He^3 and He^4 in a Cockroft-Walton generator. The three μa of He^{3+}, which constituted about two percent of the beam, were magnetically separated and directed against a clean 5-mil aluminum foil as shown in Fig. 1. Behind this foil was located a proton counter. After two hours of bombardment, the counting rate of the counter rose some fifteen times background.

Figure 2 shows the spectrum of protons observed by two different methods when two separate clean 5-mil aluminum foils were bombarded by the He^3. In the first method the detector was