The energy denominator $E_{av}-E_0$ may be approximately evaluated from the sum rules for oscillator strengths. In Feenberg units the kinetic energy is given by $-\frac{1}{2}(\Delta_1+\Delta_2+\Delta_3)$, which becomes $-\frac{3}{4}\Delta_x-\Delta_{x'}$ upon transforming to the coordinates $\mathbf{r}=\mathbf{r}_1-(\mathbf{r}_2+\mathbf{r}_3)/2$, $\mathbf{r}'=\mathbf{r}_2-\mathbf{r}_3$. In terms of these coordinates the sum rules for non-Majorana potentials are:

$$\sum_n (E_n-E_m)\,|(n|x|m)|^2=\tfrac{3}{4}, \quad \sum_n (E_n-E_m)\,|(n|x'|m)|^2=1.$$

The latter sum rule connects the ground state with excited states having parallel neutron spins.

$$(E_{av}'-E_0)\sum_n |(n|x'|0)|^2=(E_{av}'-E_0)(0|x'^2|0)=1.$$

We identify E_{av}' with E_{av} since they both represent the "center of gravity" of the continuum for the same excited states. This is of course only a very rough approximation. Using the wave function ψ_0 above, one finds that

$$(0|x'^2|0)=1/(2\mu+\nu)=a^2/2\sigma \leqq 1/(30\,mc^2).$$

This would lead to an estimate of $\frac{2}{3}\,mc^2$ for ΔE. However, one may expect a greater energy denominator because of the fact that Majorana forces will introduce an additional positive term, on the right side of the sum rule equations, which represents the noncommutability of P^M with the coordinate.[3] Upon evaluation of this term ΔE appears finally to be of the order of magnitude $0.5\,mc^2$. A more careful estimate of this effect will be made in a later paper.[4]

The writer is obliged to Dr. L. W. Nordheim and Dr. Eugene Feenberg for conversations on this subject.

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October 19, 1936

[1] Bethe and Bacher, Rev. Mod. Phys. **8**, 82 (1936); cf. pp. 146–7.
[2] Feenberg and Knipp, Phys. Rev. **48**, 906 (1935).
[3] Cf. Feenberg, Phys. Rev. **49**, 328 (1936).
[4] R. D. Present and W. Rarita, not yet published.

Reflectivity of Evaporated Silver Films

Pure silver films, deposited upon glass by evaporation in a vacuum, have recently been made by us which show appreciably higher coefficients of reflection than those from silver deposited by any other method. We have made an intensive investigation of the influence of the several variables in the evaporation process upon the properties of the deposited metal films and have applied the results of this study particularly to the evaporation of silver. Pure aluminum films were made by the same technique, and for comparison purposes were subjected to the same reflection coefficient measurements with conditions of measurement identical to those used for the silver film. The results are presented in Table I.

The influence of the infrared radiation is clearly indicated. The sodium arc, however, was used with a monochromator which completely eliminated the infrared. The Wratten filters were found to transmit some infrared. Hence, for comparison purposes the value found for the yellow light is the most reliable. This value is approximately 5.5 percent higher than that ordinarily given for silver.

TABLE I. *Reflection coefficients of silver and aluminum.*

Source of Light	Filter	Reflection Coefficients Silver	Reflection Coefficients Aluminum
White light from a 6-volt tungsten lamp	None	99.4%	89.5%
Same	One-inch water cell	99.0%	89.5%
Same	Water cell and Wratten Red No. A25	98.5%	89.2%
Same	Water cell and Wratten Green No. B58	98.5	89.6
Same	Water cell and Wratten Blue No. C5–47	98.0	88.6
Sodium Arc	None	98.5	89.5

The silver used was chemically pure and was carefully cleaned to remove surface impurities. In the vacuum chamber, before evaporation, the metal was carefully heated in a tantalum or molybdenum trough to remove all foreign matter volatile at temperatures less than that needed to vaporize the silver. This preliminary treatment is done under shields in the vacuum chamber in order to prevent contamination of the cleaned glass surface upon which the silver is later deposited. The shields are operated by an external lever mechanism through greased, ground joints.

We have noticed also that silver mirrors made by this improved technique do not seem to tarnish as readily as ordinary silver mirrors do. After standing in the laboratory for six weeks with no protection from the gases present, a decrease of less than one percent was found.

We have not made any attempt as yet to detect differences in the nature of silver films deposited by evaporation or by chemical methods, but believe the evidence here presented is indicative of some inherently dissimilar structures.

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A Correction to Note on "The Electric Moment of the $^1\Sigma_+$ to O^+ Transition in the Continuum of Cl_2"[1]

In the formula in the first paragraph, C should be c.

The fourth line of the second paragraph, "to $\Sigma^2_{E'FE'J''J'}=1$" should read "to $\Sigma_{E'}F^2_{0E'J''J'}=1$".

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[1] Gibson and Rice, Phys. Rev. **50**, 380 (1936).