included in the total error shown. Evidently only the results for lead cannot be reconciled with the calorimetric results.

A similar comparison was performed with thick-walled chambers.[4] The ionization in an air-filled cavity inside a block made of different materials was measured. The sensitivity of this chamber was determined theoretically for each wall thickness and material used in the experiment. The accuracy of this calculation is ± 5% and the possible error in ρ of ± 2.5% enter into the total error of the method. The results of this determination are given in Table III relative to the calorimetric results.

TABLE III

Thickness of front wall	2 cm Al	12 cm Al	4 cm graphite	22 cm graphite
used ρ'	0.820	0.820	0.840	0.840
(U/U_K), %	105.0	104.0	102.0	92.4
Total error %	8	8.5	8	8.5

Thus the results of the calorimetric determination, the ionization measurement, and the depth dose curve agree (except for the case of lead) within the total errors. However, the errors of the method of the transition curves can be decreased to 3%. For this purpose at the present time the method of the determination of the transition curves is being improved and the accuracy of the knowledge of ρ is being increased. In order to increase the sensitivity of the calorimetric method a calorimeter is being worked on which will allow measurements at low temperatures.

The author thanks Z. Kovarzh and I. V. Lopatin for their help in performing the measurements and A. P. Komar for his interest in the work.

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[3] Blocker, Kenney, and Panofsky, Phys. Rev. 79, 419 (1950).
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ON THE QUESTION OF THE FLUCTUATIONS OF ELECTRON CONCENTRATION IN THE F-LAYER OF THE IONOSPHERE

E. G. PROSHKIN and B. L. KASHCHEEV

Kharkov Polytechnic Institute

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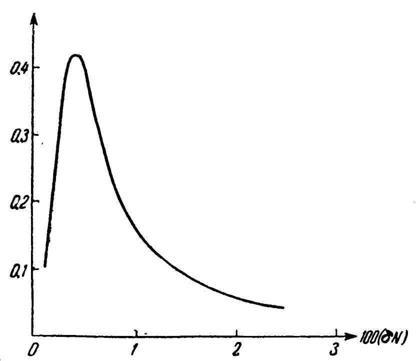
It is known that the ionosphere is a statistically non-uniform medium, in which irregularities continually appear and disappear. The mechanism by which these irregularities arise is not yet known. At this time an investigation of the inhomogeneous structure of the ionosphere is necessary for an understanding of a number of processes that take place in the ionosphere.

Experimental investigations of the inhomogeneous structure of the ionosphere can be divided into two groups, the investigation of the fine structure of the ionosphere by vertical soundings, and the investigation by the forward scatter of uhf waves. Up to the present the forward scatter of uhf waves is in fact not explained. Therefore, great interest attaches to the mechanism of scattering of radio waves by inhomogeneities in the ionosphere, suggested by Al'pert.[1]



Distribution of values of δN

Using the results obtained by investigating the inhomogeneities in the structure of the ionosphere above Khar'kov by the method of vertical sounding during the winter of 1955 — 1956,[2] we have applied the Al'pert formula[1] to calculate the value of δN for ordinary waves.

The size of the inhomogeneities was taken to be 300 m in these calculations. The figure shows the distribution of the values of δN. The observed values of δN run from 0.1×10^{-2} to 2.5×10^{-2}, and the most frequent values are $\delta N = 0.3 - 0.5 \times 10^{-2}$. No noticeable altitude dependence of δN was found for the F-Layer.

In conclusion, the authors express their thanks to Professor Ia. L. Al'pert for giving them the opportunity to familiarize themselves with the theory worked out by him for the scattering of radio waves in the ionosphere prior to publication.

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[2] E. G. Proshkin and B. L. Kaashcheev, Радиотехника и электроника (Radio Engg. and Electronics) **7**, 819 (1957).

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PHOTOPRODUCTION OF STRANGE PARTICLES

S. G. MATINIAN

Institute of Physics, Academy of Sciences, Georgian S.S.R.

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In this note, some questions connected with the photoproduction of strange particles are considered phenomenologically.

Recently, Peaslee[1] proposed a statistical model of the production of strange particles, in which he introduced the relative amplitudes α and β of the sojourn of the nucleon in the dissociated states (Λ, K) and (Σ, K), respectively. This model satisfactorily explains a number of experimental facts connected with the reaction $\pi + N \rightarrow Y + K$, if the value of $|\beta/\alpha|^2$ is taken as $1/3$. The photoproduction of strange particles on nucleons may serve as a verification of this model.

Let us consider, for example, the following reactions on hydrogen:

$$\Lambda^0 + K^+, \qquad (1a)$$

$$\gamma + p \rightarrow \Sigma^+ + K^0, \qquad (1b)$$

$$\Sigma^0 + K^+. \qquad (1c)$$

It is not difficult to see that in the Peaslee model, reaction (1a) will have a cross section proportional to $|\alpha|^2$, and reaction (1c) will have a cross section proportional to $\frac{1}{3}|\beta|^2$. Thus, according to this model, K^+ particles "associated" with the Λ^0-hyperon would be expected to be more prevalent than K^+ particles produced together with the Σ^0 hyperon:

$$\sigma(c)/\sigma(a) = \frac{1}{3}|\beta/\alpha|^2 \approx 1/9. \qquad (2)$$

Of course, the energy of the γ-quanta must be above threshold in order to avoid threshold effects.

Since the contribution of the Σ^+ hyperon currents to the cross section is small in comparison with the K^+ meson currents, reaction (1b) must also be considerably repressed with respect to reaction (1c). In the above consideration, we did not take account of the influence of the magnetic moment of the hyperon, which is valid for large energy of the γ-quanta. We note that according to the Peaslee model, a forward directionality of K^+ mesons (in the center of mass system) is expected.