

MAX-PLANCK-INSTITUT FÜR PHYSIK UND ASTROPHYSIK

INSTITUT FÜR PHYSIK

Prof. W. Heisenberg

MÜNCHEN 23, March 20, 1959
AUMEISTERSTRASSE
TELEFON 363201-6

Dr. Feza Gürsey
School of Mathematics
The Institute for Advanced Study
Princeton, N.J., USA

Dear Gürsey:

Many thanks for your letter. We are looking forward to your stay in Munich whenever this seems convenient to you. It will certainly be possible to provide here the necessary funds for your stay.

I was also very interested in the informations you gave in your letter concerning new experimental results on parity conservation in nucleon-nucleon interactions. I did not quite understand why you think that the mass difference between K^0 and K^+ of about 4 MeV should present a special difficulty. Since we have a similar situation for the π -meson, I cannot find this result too surprising.

In the meantime I hope you have got our preprint on the equation

$$\nabla_{\mu} \frac{\partial \psi}{\partial x_{\mu}} \pm c^2 \gamma_{\mu} \gamma_5 \psi (\nabla_{\mu} \psi) = 0.$$

I wonder what you think about it. I feel that two of the main problems which had worried Pauli and myself last year have found now a satisfactory answer. The quantum number l_N or l_Q cannot be explained by doubling the vacuum; but it seems to find a natural explanation through the scale transformation. The fact that strange particles may have an integer isospin even if they have a half quantum ordinary spin seems to be a natural consequence of the reduction of symmetry which in turn should be explained by an infinite isospin (or at least a very big isospin) of the "rest of the world". Though the discrete groups of the equation have not yet been studied carefully, I feel that the group structure of the equation corresponds very closely to what we see in the elementary particles. I also feel that the results concerning the β -interactions are quite encouraging; but of course this is just a beginning.

With the best wishes,

Yours sincerely,

Heisenberg

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