



368 E. Cordova St.
Vancouver B. C.
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Professor H. Yukawa
Department of Physics
Kyoto Imperial University
Kyoto, Japan

Dear Professor Yukawa:

Thank you very much for your letter of June 3. After attending the American Physical Society Meeting in Pasadena, I came up here for a vacation, and I am having a fine time.

It seems at present that the pseudoscalar meson gives the best agreement with experiments. Schwinger has treated the problem in the limit of large coupling by introducing a source function, and found that the scattering cross section is small even when the nuclear force is made large. He has also shown that mesons can be bound to a nucleon, thus giving rise to multiply charged particles of unit mass which have been suggested by Bhabha. Professor Oppenheimer has looked into the possibility of multiple production of mesons by collision of high energy protons, and the results, though rough, can explain the meson production by cosmic rays. They have sent a note to the Physical Review telling about these results.

Rarita and Schwinger developed a convenient formalism for a particle of spin 3/2, using a 4-vector wave function ψ_μ each component of which is a 4-component Dirac spinor, and satisfying the supplementary conditions $\partial_\nu \psi_\nu = 0$ and $\gamma_\mu \psi_\mu = 0$. Using this theory, I have looked into the theory of β -decay with neutrino of spin 3/2. I found that no possible coupling can give the Fermi type of distribution so that the possibility of spin 3/2 for the neutrino is ruled out. These results will appear in the July 1 issue of the Physical Review as letters to the editor.

Please give my best regards to Dr. Sakata, Mr. Kobayasi, and Mr. Taketani.

Yours sincerely,

Shuichi Kuzaka