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On the Interaction of  
Elementary Particles. I.  
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§ 1. Introduction

At the present stage of the quantum theory little is known about the nature of interaction between elementary particles. For example, the <sup>interaction</sup> force acting between a neutron and a proton ~~we are not sure~~ whether is an ordinary attraction force or an "exchange" <sup>Platzwechsel</sup> interaction first proposed by Heisenberg. Recently Fermi<sup>(1)</sup> has treated the problem of  $\beta$ -ray disintegration on the hypothesis of the existence of "neutrino". According to this theory a neutron and a proton can interact by emitting and absorbing a neutrino and an electron. Unfortunately the energy of interaction calculated on this such assumption<sup>(2)</sup> is much too small to account for the binding of neutrons and protons in the nucleus. To remove this defect we <sup>may</sup> ~~can~~ <sup>have to</sup> modify the theory of Heisenberg or Fermi in the following way.

The transition of a heavy particle from a neutron state to a proton state is not always accompanied

<sup>(1)</sup> E. Fermi, Zeits. f. Phys. 88, 161 (1934).

<sup>(2)</sup> J. J. Tamm, Nature, 133, 981 (1934).