4. (On the Interaction of Elementary Particles. IV.

By Hidoki Yukawa, Shoichi Sakata, Minoru Kobayasi and Mitsuico Takotani

§1. Introduction and Summary.

The theory of the heavy quantum with charge, mass and spin satisfying linear tensor equations of Dirac-Frenkel type was developed recently by several authors, 1) a), b), c), d) and was successful in explaining the exchange forces between the neutron and the proton. It was shown further that the introduction of the neutral quantum was necessary in order to account for approximate equality of the like particle and unlike particle forces. In §2 of the present paper, we deal with this problem by assuming the same equations for the neutral quantum as those for the charged quanta. It is assumed, moreover, that the interaction of the heavy particle with the former is the same as that with the latter, except that the factor of the form \( a + b \gamma_3 \) (or \( a + b \gamma_\tau \)) appears in place of \( \tau + \gamma_\tau \) (or \( \tau - \gamma_\tau \)), where \( a \) and \( b \) are

4) Yukawa, Sakata and Takotani, Proc. Phys.-Math. Soc. Japan 20, 319 (1938). This paper will be referred to as III.