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On the Interaction of Elementary Particles. III.

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§ 1. Introduction and Summary

In two previous papers¹⁾, a theory of the interaction of elementary particles was discussed on the hypothesis of by introducing a new field of force. On quantizing this field, we obtained the new quanta each with the elementary charge either positive or negative and the mass intermediate between those of the electron and the proton, satisfying the Bose statistics. In I this field was ~~considered to be~~ ^{assumed} ~~the~~ ^{to be} ~~obeying~~ ^{of} ~~the~~ ^{two} potentials of four vector functions conjugate complex to each other in I, whereas it was described by two scalar functions in II. Neither of ~~these~~ two formulations was ~~sufficient~~ ^{not} ~~for~~ ^{found} ~~the~~ ^{adequate} ~~derivation~~ ^{enough} of the nuclear ^{interaction} forces, ~~and~~ ^{and} ~~adequate~~ ^{enough} the magnetic moments of the heavy particles. In this paper, these two formulations were

adopted for the sake of their simplicity, but none neither of them was ~~found~~ ^{considered} ~~adequate~~ ^{to be} ~~the~~ ^{perfect} ~~derivation~~ ^{adequate} of the correct ~~derivation~~ ^{found} ~~adequate~~ ^{to be} ~~the~~ ^{derivation} of all sorts of nuclei ~~into~~ ^{complete} ~~the~~ ^{correct} ~~expressions~~ ^{for} the interaction of heavy particles and their anomalous magnetic moments? In this paper, we want to ~~start~~ ^{begin} ~~from~~ ^{with} ~~the~~ ^{the} ~~problem~~ ^{problem} of linearized ~~equations~~ ^{equations} of the new field equations and to show that and show that we ~~can~~ ^{generalize} ~~derive~~ ^{the} ~~new~~ ^{new} field equations considered as an extension of

1) Yukawa, Proc. Phys. Math. Soc. Japan 17, 48, 1935; Yukawa and Sakata, ibid. 19, 1084, 1937. ~~See also~~ These papers will be referred to as I and II respectively. See also Yukawa, Proc. ibid. 19, 712, 1937.