DEPARTMENT OF PHYSICS
OSAKA IMPERIAL UNIVERSITY.

DATE..............................

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~~The relation between~~ Heisenberg's theory of the nucleus and Fermi's theory of the β-disintegration was ~~made more intimate~~ unified by considering the field of force corresponding to "Platzwechsel" between neutron and proton (~~or~~ as well as between neutrino and electron). ~~This field when quanti~~ ~~The quantum accompanying~~ the properties of this field was discussed and the following conclusions were reached. ~~has the following properties.~~ It has the proper mass of about hundred times of electron ~~mass~~ mass and the elementary charge and ~~which~~ obeys Bose's statistics. ~~The~~ The interaction ~~of the quan~~ with the ~~q~~ heavy particle should

Heisenberg's theory

The ~~field~~ potential of force corresponding to "Platzwechsel" between the neutron and the proton in ~~the~~ Heisenberg theory of the nucleus was ~~considered~~ assumed to be of the form ~~$e^{-\lambda r}/r$~~ $g^2 g \cdot e^{-\lambda r}/r$, ~~and the field equation was f~~ which is the static solution of ~~wave equation~~ the wave equation

$$\left(\Delta - \frac{1}{c^2}\frac{\partial^2}{\partial t^2} - \lambda^2\right) U = 0$$

~~The magnitudes of~~ The two constants g, λ were estimated by comparison with experiments.

The properties of the quantum accompanying this field were discussed and the following conclusions were reached. It has the proper mass