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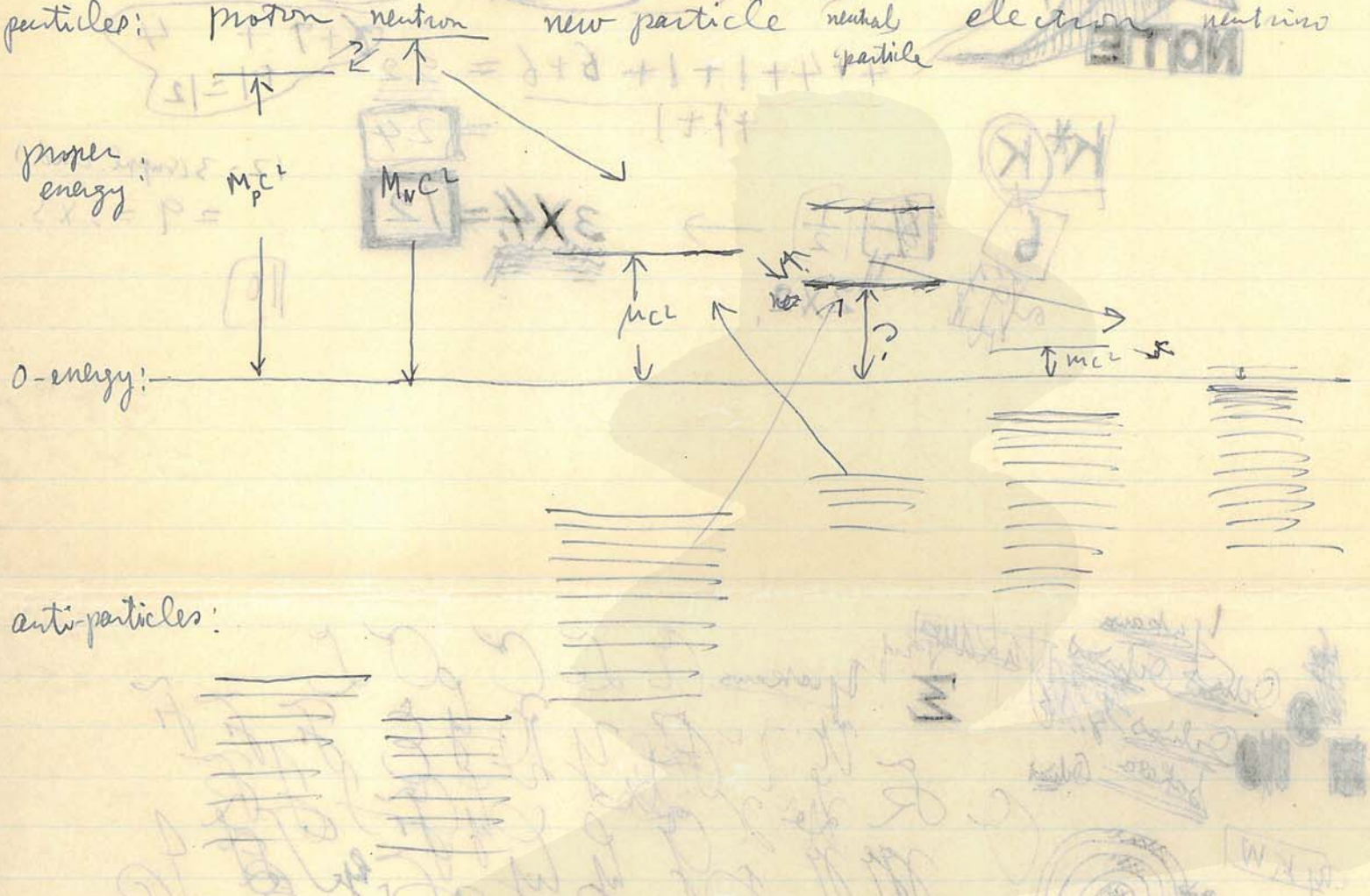
Further Remarks, On the Nature of the New Particle in Cosmic Ray.

By Hideki Yukawa

i) Statistical Properties

$\boxed{\text{Fermi Statistics}}$



i) New Particle が電荷を持たないことを説明するために、charged particle は neutral particle に対し electron と anti-neutrino を放出すると考へられるが、もしこの neutral particle が存在しないで間接に ~~[illegible]~~ 考へるとすれば、

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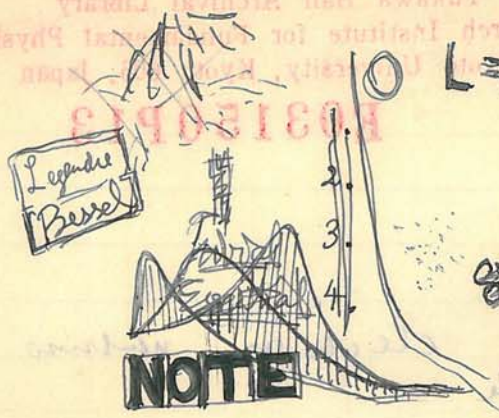

$$L = \left(\frac{1}{c}\frac{\partial \vec{V}^*}{\partial t} + \mathrm{grad}\, U^*\right)\left(\frac{1}{c}\frac{\partial \vec{V}}{\partial t} + \mathrm{grad}\, U\right) - \mathrm{curl}\,\vec{V}^*\,\mathrm{curl}\,\vec{V} - \left(\frac{1}{c}\frac{\partial U^*}{\partial t} + \mathrm{div}\,\vec{V}^*\right)\left(\frac{1}{c}\frac{\partial U}{\partial t} + \mathrm{div}\,\vec{V}\right) - \kappa^2\left(\vec{V}^*\vec{V} - U^*U\right)$$

$$= \left(\vec{F}^*\vec{F} - \vec{G}^*\vec{G} - K^*K - \vec{K}^*\vec{V} + U^*U\right)$$

$$4+4+1+1+6+6 = 22$$
$$+1+1 = 24$$

$6+7+4$
$F1 = 12$

K^*K

6

$\frac{1}{2}$ → $3\times 4 = 12$

2×2

$12 - 3$ (suppl. cond.)
$= 9 = 3\times 3$.

10

$\frac{1}{c}\frac{\partial}{\partial t}$

$\Delta - \kappa^2$

$\Delta U_0 - \kappa^2 U_0 + \mathrm{div}$

$\mathrm{div}\left(\mathrm{grad}\, U_0 + \frac{1}{c}\frac{\partial \vec{U}}{\partial t}\right)$

$\pm \kappa \left(\frac{1}{c}\frac{\partial S}{\partial t} + \kappa U_0\right)$

$= -\mathrm{div}\,\vec{F} - \kappa K_0$