149. A Necessary Unitary Field Theory as a Non-Holonomic Parabolic Lie Geometry Realized in the Three-Dimensional Cartesian Space. II

By Tsurusaburo TAKASU

(Comm. by Z. SUETUNA, M.J.A., Oct. 12, 1954)

The purpose of the present paper consists in the following five points: to deduce (i), (ii), (ii′), (iii), (iii′) mentioned below from Part I (these Proc., **29** (1953).

Since the three-dimensional non-holonomic Laguerre (parabolic Lie) geometry is in law a four-dimensional teleparallelism geometry keeping the Riemann (Weyl) metric, it is remarkable that the following conjecture of Prof. Einstein of 1928, which seems to be now scarcely considered, must acquire a renaissance: "Es ist denkbar, dass diese Theorie die ursprüngliche Fassung der allgemeinen Relativitätstheorie verdrängen wird".

(i) A Unitary Field Theory of a Single Particle

6. *A Necessary Unitary Field Theory of a Single Particle Charged with Rest-mass m_0 and Constant Electricity $-e$.* In Art. 4, we have solved a two particles problem stated in Art. 2 and the resulting generalizations of the Maxwell's equations were (4.24), (4.25), (4.26) and (4.27). Thereby the continuity condition (4.23) was assumed. Now in the case of a single particle P, we have

$$(6.1)\qquad \overline{m}_0=\overline{e}=\overline{\varepsilon}^i=\overline{\varepsilon}^4=\overline{\sigma}^i=\overline{\sigma}^4=\overline{\mathfrak{X}}^i=\overline{X}^i=\overline{a}^i=\overline{\alpha}^i=0.$$

Hence (4.24), (4.25), (4.26) and (4.27) become the *necessary-unitary-field-theoretical generalization of the Maxwell's equations*:

$$(6.2)\quad \frac{\partial}{\omega^i}(\mathfrak{X}^i+eX^i)=\varepsilon^4+\sigma^4,\ \frac{\partial}{\omega^4}(a^i+e\alpha^i)+\frac{\partial}{\omega^j}(\mathfrak{X}^k+eX^k)-\frac{\partial}{\omega^k}(\mathfrak{X}^j+eX^j)=0,$$

$$(6.2')\quad \frac{\partial}{\omega^j}(a^k+e\alpha^k)-\frac{\partial}{\omega^k}(a^j+e\alpha^j)-\frac{\partial}{\omega^4}(\mathfrak{X}^i+eX^i)=\varepsilon^i+\sigma^i,\ \frac{\partial}{\omega^i}(a^i+e\alpha^i)=0.$$

7. *General-Relativistic and Necessary-Unitary-Field-Theoretical Generalization of the Dirac Equation in the Case of a Single Particle.* In the case of a single particle P, the *general-relativistic and necessary-unitary-field-theoretical generalizations*

$$(5.3)\quad \left[\gamma_i\left(\frac{h}{2\pi i}E\frac{\partial}{\omega^i}+e\phi^i+\frac{h}{2\pi i}\overline{E}\frac{\partial}{\omega^i}+\overline{e}\overline{\phi}^i\right)+\gamma_4\left(\frac{h}{2\pi i}E\frac{\partial}{\omega^4}+e\phi^4+\overline{m}_0\overline{E}^2\right)\right.$$
$$\left.+\gamma_5\left(\frac{h}{2\pi i}\overline{E}\frac{\partial}{\omega^5}+\overline{e}\overline{\phi}^5+m_0E^2\right)\right]\psi=0,$$