171. *Equations of Motion of a Free Particle in the Author's General Relativity as a Non-Holonomic Laguerre Geometry Realized in the Moving Three-Dimensional Cartesian Space*

By Tsurusaburo TAKASU

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The author [4][1] has established anew a theory of relativity as a non-holonomic Laguerre geometry realized in the three-dimensional Cartesian space. Although the geometry itself is nothing other than Cartan-Weitzenböck's teleparallelism geometry (Einstein, [2]) keeping the Riemann metric system when it is grasped in 4-dimension, the point of view is different from the Einstein's and has the following fortes ("Vorteile"): (i) it coheres to the physical phenomena in the very places where the phenomena take places: (ii) it is perceptional rather than to be conceptual; (iii) it implies necessities and needs no fundamental assumptions; (iv) it is naive and has an extreme transparency unifying the classical physics, the special relativity (which is in fact a 3-dimensional holonomic Laguerre geometry), the general relativity and the author's necessary unitary field theory, which is non-holonomic parabolic Lie geometry (Takasu, [5], [6], [7], [8], [9]), and not only that it unifies substantially the gravitation with the electromagnetism in a similar manner[2] as the light wave and the electromagnetic wave are unified, but also it admits of fields of (holonomic or non-holonomic) actions of *any kind of energy* emitted from each particle into unification; (v) it admits of the following fundamental principle: "The non-holonomic-Laguerre-geometrical quantum mechanics is obtainable from the Laguerre-geometrical (i. e. special-relativistic) quantum mechanics by replacing the special-relativistic action $dr=cdt$ in the latter by the corresponding non-holonomic-Laguerre-geometrical non-holonomic[3] action $dr=Edt$ and the partial derivative operators $\frac{\partial}{\partial \xi^i}$

1) The ciphers in the square brackets refer to the References at the end of this paper.

2) The more than a dozen unitary field theories hitherto appeared are as for unification all formal ones. They may describe respective ideal cases of phenomena (e.g. if photons emitted by an electron emit energy spherically, the Einstein-Mayer theory describes it. As for the Einstein's new theory [3], Appendix II, see the objection of Prof. C. Møller [10]. As for $g_{\mu\nu}$, see my view [6], p. 264).

3) We can write the differential dr only in the linear sense (e.g. along the geodesic curves of the second kind in the 4-dimension), for $E\,dt=\omega_\mu{}^4(x^\lambda)dx^\mu$ is not holonomic.