

ON THE CONNECTION PARAMETERS IN A NON-HOLONOMIC SPACE OF LINE-ELEMENTS

By

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§ 0. Introduction.

The theory of a non-holonomic space of line-elements or non-holonomic system depending on line-elements was treated already by T. HOSOKAWA⁽¹⁾, H. HOMBU⁽²⁾, T. SUGURI⁽³⁾, V. WAGNER⁽⁴⁾ and the present author⁽⁵⁾.

In the present papers we shall introduce many properties appearing only in a special non-holonomic space of line-elements defined in the previous paper⁽⁶⁾ (N.S.F.). In § 1, we shall study the connection parameters, torsion tensors and curvature tensors in a non-holonomic space of line-elements and in § 2 find them belonging to the groups of non-holonomic transformations under which the non-holonomic subspaces of line-elements: X_n^m and X_n^{n-m} are invariant. § 3 is devoted to determine the structure of the same quantities in a non-holonomic EUCLIDEAN space of line-elements. The second fundamental tensors of non-holonomic subspace and geodesic non-holonomic subspace are introduced in § 4.

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(1) T. HOSOKAWA: Über nicht-holonome Übertragung in allgemeiner Mannigfaltigkeit T_n , Jour. Fac. Sci. Hokkaido Imper. Univ., Series 1, Vol. 2, No. 1-2 (1934), 1-11.

(2) H. HOMBU: Die Krümmungstheorie in Finslerschen Raume, Jour. Fac. Sci. Hokkaido Imper. Univ., Series 1, Vol. 5 (1936), 67-94.

(3) T. SUGURI: On the non-holonomic FINSLER space (not yet printed).

(4) V. WAGNER: The inner geometry of non-linear non-holonomic manifolds, Rec. Math. N. S., Vol. 13 (1943), 135-167.

(5) Y. KATSURADA: On the theory in a non-holonomic system in a FINSLER space (in printing).

(6) This will be in the present paper referred with N.S.F..