ON THE WIRTINGER'S CONNECTIONS IN HIGHER ORDER SPACES

By

Saburo IDE

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§ 0. Introduction

The concept of connection introduced by W. WIRTINGER [1][1] was given as a generalization of WEYL's connection [2] under the consideration of the possibility of its application to physics and astronomy. He thought at that time that his theory was ample enough to stand for any mathematical requirement in some branches of them.

Nowadays, the progress of physics and astronomy is so remarkable that his idea can not be fully accepted, but from the geometrical point of view his concept of connection itself is very interesting, various generalizations have been performed by many students and moreover the study of his concept is being carried on even now.

Geometrically the WIRTINGER's connection contains two important concepts, the one is that of double vectors, the other is that of non-linear connections.

In the former case H. EYRAUD [3] generalized the parallel displacement of WEYL but his research has no direct relation with WIRTINGER. Later from a different point of view A. KAWAGUCHI [4] pointed out that as a special case of his general theory, the WIRTINGER's connection was derived. In addition to these papers the present author [5] has de-

(1) Numbers in brackets refer to the references at the end of the paper.