K. YANO AND M. AKO
KŌDAI MATH. SEM. REP.
25 (1973), 63—94

ALMOST QUATERNION STRUCTURES OF THE SECOND KIND AND ALMOST TANGENT STRUCTURES

BY KENTARO YANO AND MITSUE AKO

Dedicated to Professor S. Ishihara on his fiftieth birthday

§ 0. Introduction.

A set of three tensor fields F, G and H of type $(1,1)$ in a differentiable manifold which satisfy

$$F^2=-1, \quad G^2=-1, \quad H^2=-1,$$

$$F=GH=-HG, \quad G=HF=-FH, \quad H=FG=-GF$$

is called an *almost quaternion structure* and a differentiable manifold with an almost quaternion structure an *almost quaternion manifold.*

If there exists, in an almost quaternion manifold, a system of coordinate neighborhoods with respect to which components of F, G and H are all constant, then the almost quaternion structure is said to be *integrable* and the almost quaternion manifold is called a *quaternion manifold.*

In a previous paper [8], the present authors studied integrability conditions for almost quaternion structures.

A set of three tensor fields F, G and H of type $(1,1)$ in a differentiable manifold which satisfy

$$F^2=-1, \quad G^2=1, \quad H^2=1,$$

$$F=-GH=HG, \quad G=HF=-FH, \quad H=FG=-GF$$

is called an *almost quaternion structure of the second kind* and a differentiable manifold with an almost quaternion structure of the second kind an *almost quaternion manifold of the second kind.*

The main purpose of the present paper is first of all to study integrability conditions for an almost quaternion structure of the second kind and then to apply the results to the study of almost tangent structures and tangent structures.

Received February 2, 1972.