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ON CR-STRUCTURES AND F-STRUCTURE SATISFYING $F^K + (-)^{K+1}F = 0$

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ABSTRACT. CR-submanifolds of a Kahlerian manifold have been defined by Bejancu [**1**], and are now being studied by various authors, see [**2, 3, 9**]. The theory of f-structure was developed by Yano [**7**], Yano and Ishihara [**8**]. Goldberg [**5**] and others. The purpose of this paper is to show a relationship between CR-structures and F-structure satisfying $F^K + (-)^{K+1}F = 0$, $F^W + (-)^{W+1}F \neq 0$, for $1 < W < K$, where K is a fixed positive integer greater than 2. The case when k is odd (≥ 3) has been considered in this paper.

1. Introduction. Let F be a nonzero tensor field of the type $(1,1)$ and of class c^∞ on an n-dimensional manifold M such that [**6**].

$$F^K + (-)^{K+1}F = 0 \quad \text{and} \quad F^W + (-)^{W+1}F \neq 0 \quad \text{for} \quad 1 < W < K \tag{1.1}$$

where K is a fixed positive integer greater than 2. Such a structure on M is called an F-structure of rank r and of degree K. If the rank of F is constant and $r = r(F)$, then M is called an F-structure manifold of degree $K(\geq 3)$.

Let the operators on M be defined as follows [**6**]

$$l = (-)^K F^{K-1}, \quad m = I + (-)^{K-1}F^{K-1}, \tag{1.2}$$

where I denotes the identity operator on M.

We will state the following two theorems [**6**].

Theorem (1.1). *Let M be an F-structure manifold. Then*

$$l + m = I, \quad l^2 = l \quad \text{and} \quad m^2 = m. \tag{1.3}$$

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