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# SEMI-INVARIANT SUBMANIFOLDS OF CODIMENSION 3 WITH HARMONIC CURVATURE

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## § 0. Introduction.

A Riemannian curvature tensor is said to be *harmonic* if the Ricci tensor $R_{ji}$ satisfies the Codazzi equation, namely, in local coordinates, $R_{jik}=R_{jki}$, where $R_{jik}$ denotes the covariant derivative of the Ricci tensor $R_{ji}$. Recently Riemannian manifolds with harmonic curvature are studied by A. Derdziński [1], H. Nakagawa and U-H. Ki [4], [5], [6], E. Ômachi [9], M. Umehara [6], [10] and others.

The purpose of the present paper is to study submanifolds with harmonic curvature admitting almost contact metric structure in a Euclidean space and to prove the following:

THEOREM. *Let $M$ be a $(2n+1)$-dimensional complete simply connected semi-invariant submanifold in a $(2n+4)$-dimensional Euclidean space. If $M$ has harmonic curvature and of constant mean curvature and if the distinguished normal is parallel in the normal bundle, then $M$ is isometric to one of the following spaces;*

$$E^{2n+1},\ S^{2n+1} \quad or \quad S^{2n-r+1}\times E^{r}, \qquad (r\leqq 2n-1).$$

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## § 1. Preliminaries.

Let $\overline{M}$ be a $(2n+4)$-dimensional almost Hermitian manifold covered by a system of coordinate neighborhoods $\{U : X^{A}\}$. Manifolds, submanifolds, geometric objects and mappings discussed in this paper are assumed to be differentiable and of class $C^{\infty}$. Denote by $G_{CB}$ components of the Hermitian metric tensor, and by $F_{B}{}^{A}$ those of the almost complex structure $F$ of $\overline{M}$. Then we have

$$F_{C}{}^{B}F_{B}{}^{A}=-\delta_{C}{}^{A}, \tag{1.1}$$

$$F_{C}{}^{E}F_{B}{}^{D}G_{ED}=G_{CB}, \tag{1.2}$$

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