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ON SEMI-SYMMETRIC COMPLEX HYPERSURFACES OF A SEMI-DEFINITE COMPLEX SPACE FORM

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ABSTRACT. The purpose of this paper is to give a complete classification of semi-symmetric complex hypersurfaces M in an $(n+1)$-dimensional semi-definite complex space form $M_{s+t}^{n+1}(c)$. Moreover, we also give a classification of semi-symmetric complex hypersurfaces in a semi-definite complex Euclidean space C_t^{n+1}, $t = 0$ or 1 when M has no geodesic points.

1. Introduction. Theory of indefinite complex submanifolds of an indefinite complex space form is one of the most interesting topics in differential geometry, and it has been investigated by many geometers from various points of view ([**1**], [**2**], [**3**], [**6**], [**9**], [**12**], [**13**] and [**15**], etc.).

Let $M_t^m(c)$ be an m-dimensional semi-definite complex space form of constant holomorphic sectional curvature c and of index $2t$, $0 \leqq t \leqq m$. As is well known, it globally consists of the following three kinds of complex space forms: the semi-definite complex projective space CP_t^m, the semi-definite complex Euclidean space C_t^m or the semi-definite complex hyperbolic space CH_t^m, according to whether $c > 0$, $c = 0$ or $c < 0$.

Now let M be a semi-definite Kaehler manifold. We denote by R the Riemannnian curvature tensor defined on M. Then M is said to be *semi-symmetric* if it satisfies the condition $R(X,Y)R = 0$ for any vector field X and Y on M. Its notion is much wider than the notion of locally symmetric spaces, that is, $\nabla R = 0$. The notion of semi-symmetric Riemannian spaces was first introduced by Cartan and

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