

COMPLEX HYPERBOLIC QUADRIC WITH RULED REAL HYPERSURFACES

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ABSTRACT. In this talk, we introduce a new family of real hypersurfaces in the complex hyperbolic quadric $Q^{n*} = SO_{2,n}^o/SO_2SO_n$, namely, the ruled real hypersurfaces foliated by complex hypersurfaces. In [1], Berndt described an example of such a real hypersurface in Q^{n*} as a homogeneous real hypersurface generated by an \mathfrak{A} -principal horocycle in a real form $\mathbb{R}H^n$. So, in this paper, we compute a detailed expression of the shape operator for ruled real hypersurfaces in Q^{n*} and investigate their characterizations in terms of the shape operator and the integrable distribution $\mathcal{C} = \{X \in TM \mid X \perp \xi\}$. Then, by using these observations, we give two kinds of classifications of real hypersurfaces in Q^{n*} satisfying η -parallelism under either η -commutativity of the shape operator or integrability of the distribution \mathcal{C} . Moreover, we prove that the unit normal vector field of a real hypersurface with η -parallel shape operator in Q^{n*} is \mathfrak{A} -principal. On the other hand, it is known that all contact real hypersurfaces in Q^{n*} have a \mathfrak{A} -principal normal vector field (see [2, 3, 4]). Motivated by these results, we give a characterization of contact real hypersurfaces in Q^{n*} in terms of η -parallel shape operator.

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