PARALLELISM FOR THE SHAPE OPERATOR ON REAL HYPERSURFACES IN THE COMPLEX QUADRIC

HYNJIN AND YOUNG JIN SUH

Research Institute of Real and Complex Manifolds, Kyungpook National University, Daegu, South Korea
Department of Mathematics & RIRCM, Kyungpook National University, Daegu, South Korea

In the class of Hermitian symmetric spaces of rank 2, usually we can give examples of Riemannian symmetric spaces $SU_{m+2}/S(U_2 U_m)$ and $S_{m,2}/S(U_2 U_m)$, which are said to be complex two-plane Grassmannians and complex hyperbolic two-plane Grassmannians, respectively.

In this talk, we will consider the complex quadric $SO_{m+2}/SO_m SO_2$ as another kind of Hermitian symmetric space with rank 2 of compact type different from the previous ones, which is a complex hypersurface in complex projective space $\mathbb{C}P^m$. And it can be regard as a kind of real Grassmann manifold of compact type with rank 2. Accordingly, the complex quadric admits both a complex conjugation structure $A$ and a Kaehler structure $J$, with anti-commutes with each other, $JA = AJ$.

By using these geometric structures of the ambient space we consider the notion of parallelism with respect to the shape operator on a real hypersurface in the complex quadric. And we classify a Hopf real hypersurface that satisfy the given parallelism in the complex quadric.

REFERENCES