

998-53-55

Ivko M Dimitric* (ivko@psu.edu), 1 University Drive, Penn State Fayette, PO Box 519, Uniontown, PA 15401. *Real hypersurfaces of low Chen-type in non-flat complex space forms.* Preliminary report.

In the theory of submanifolds of finite type one calls an isometric immersion $x : M \rightarrow E^N$ of a Riemannian manifold into Euclidean space an immersion of k -type if the position vector allows the decomposition into k eigenvectors of the Laplacian.

A complex projective or hyperbolic space $\mathbb{C}Q^m$ can be isometrically embedded into the Euclidean space of Hermitian matrices $H^{(1)}(m+1)$ by the first standard embedding ϕ . Thus for any submanifold $x : M \rightarrow \mathbb{C}Q^m$ we have an associated immersion $\tilde{x} = \phi \circ x$. We study the Hopf hypersurfaces of $\mathbb{C}Q^m$ whose associated immersion \tilde{x} is of low type. We prove the following result:

Let M^n be a Hopf hypersurface of $\mathbb{C}Q^m(4)$ ($n = 2m - 1$). Then M^n is of 2-type via \tilde{x} if and only if it is an open portion of one of the following: (i) A geodesic hypersphere of any radius $r \in (0, \pi/2]$ except $r = \arctan \sqrt{n+2}$. (ii) A tube of certain radius over canonically embedded $\mathbb{C}P^k$, $k = 1, \dots, n - 2$. (iii) A tube of certain radius over a complex quadric \mathbf{Q}^{m-1} .

We also characterize minimal Hopf hypersurfaces of these spaces which are mass-symmetric and of 3-type in $H^{(1)}(m+1)$. (Received January 06, 2004)