Recent Advances in the Study of Low-Type Submanifolds in Real Space Forms

Ivko Dimitric

Department of Mathematics, Penn State University Fayette, USA
ivko@psu.edu

ABSTRACT

We give an overview of the theory and the results surrounding the study of submanifolds of a sphere and real projective and hyperbolic spaces that are of low Chen- type in a suitable (pseudo) Euclidean spaces of symmetric matrices via the standard immersions by projectors. For a given positive integer k, a k-type immersion is an isometric immersion that allows a decomposition into a sum of k non-constant vector eigenfunctions of the Laplacian that correspond to different eigenvalues. We obtain a classification of 2-type hypersurfaces of these space forms and of minimal 3-type hypersurfaces of dimension less than six in these spaces. Not surprisingly, the examples include some of the well-known isoparametric hypersurfaces whose number of principal curvatures is less than four. Then, we propose a suitable approach to studying Chen type of some spherical isoparametric hypersurfaces with four principal curvatures.