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Ivko M Dimitric* (ivko@psu.edu), Penn State University Fayette, 1 University Drive, P.O. Box 519, Uniontown, PA 15401. *Hypersurfaces of low type in real space forms via the immersions by projectors.*

We consider the immersions of the sphere and real projective and hyperbolic space into a suitable (pseudo) Euclidean space of symmetric matrices by projection operators. Hypersurfaces of these space forms are studied whose position vectors via these immersions by projectors are decomposable into a sum of two or three vector eigenfunctions of the Laplace operator. Such hypersurfaces are said to be of 2- or 3-type respectively. We classify 2-type hypersurfaces in these spaces and give two sets of necessary conditions for a minimal hypersurface to be of 3-type and for a CMC hypersurface to be mass-symmetric and of 3-type. These conditions are then used to classify such hypersurfaces of dimension ≤ 5 . For example, the complete minimal hypersurfaces of S^{n+1} that are of 3-type are the 3-dimensional Cartan minimal hypersurface $SO(3)/(Z_2 \times Z_2)$ and the Clifford minimal hypersurface $M_{p,n-p}$ for $n \neq 2p$. An interesting characterization of a horosphere in H^{n+1} is also obtained. (Received September 20, 2007)