

On the quadric CMC spacelike hypersurfaces in Lorentzian space forms

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ABSTRACT

This work corresponds to the paper [2]. In 2008, Alías, Brasil and Perdomo [1] studied complete hypersurfaces immersed in the unit Euclidean sphere $\mathbb{S}^{n+1} \subset \mathbb{R}^{n+2}$, whose support functions with respect to a fixed nonzero vector of the Euclidean space \mathbb{R}^{n+2} are linearly related. In this setting, they showed that such a hypersurface having constant mean curvature must be either totally umbilical or isometric to a Clifford torus. Here, we deal with complete spacelike hypersurfaces immersed with constant mean curvature in a Lorentzian space form. Under the assumption that the support functions with respect to a fixed nonzero vector are linearly related, we prove that such a hypersurface must be either totally umbilical or isometric to a hyperbolic cylinder of the ambient space.

References

- [1] L.J. Alías, A. Brasil Jr. O. Perdomo, *A characterization of quadric constant mean curvature hypersurfaces of spheres*, J. Geom. Anal. **18** (2008), 687–703.
- [2] F.R. dos Santos, H.F. de Lima C.P. Aquino, *On the quadric CMC spacelike hypersurfaces in Lorentzian space forms, to appear in Colloquium Mathematicum* (2016).