World Academy of Science, Engineering and Technology
International Journal of Physical and Mathematical Sciences
Vol:16, No:12, 2022

Some Results for F-Minimal Hypersurfaces in Manifolds with Density

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Abstract : In this work, we study the hypersurfaces of constant weighted mean curvature embedded in weighted manifolds. We give a condition about these hypersurfaces to be minimal. This condition is given by the ellipticity of the weighted Newton transformations. We especially prove that two compact hypersurfaces of constant weighted mean curvature embedded in space forms and with the intersection in at least a point of the boundary must be transverse. The method is based on the calculus of the matrix of the second fundamental form in a boundary point and then the matrix associated with the Newton transformations. By equality, we find the weighted elementary symmetric function on the boundary of the hypersurface. We give in the end some examples and applications. Especially in Euclidean space, we use the above result to prove the Alexandrov spherical caps conjecture for the weighted case.

Keywords : weighted mean curvature, weighted manifolds, ellipticity, Newton transformations
Conference Title : ICPM 2022 : International Conference on Physics and Mathematics
Conference Location : Rome, Italy
Conference Dates : December 15-16, 2022

Open Science Index, Physical and Mathematical Sciences Vol:16, No:12, 2022 publications.waset.org/abstracts/160174.pdf