Stable constant mean curvature hypersurfaces in the real projective space

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Abstract
In this paper, we prove that the only compact two-sided hypersurfaces with constant mean curvature $H$ which are weakly stable in $\mathbb{RP}^{n+1}$ and have constant scalar curvature are (i) the twofold covering of a totally geodesic projective space; (ii) the geodesic spheres in $\mathbb{RP}^{n+1}$; and (iii) the quotient to $\mathbb{RP}^{n+1}$ of the hypersurface $S^k(r) \times S^{n-k}((\sqrt{1-r^2}) \rightarrow S^{n+1}$ obtained as the product of two spheres of dimensions $k$ and $n-k$, with $k = 1, \ldots, n-1$, and radii $r$ and $\sqrt{1-r^2}$, respectively, with $\sqrt{k/(n+2)} \leq r \leq \sqrt{(k+2)/(n+2)}$.

References