On Some L_r-Biharmonic Euclidean Hypersurfaces

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Abstract: In decade eighty, Bang-Yen Chen introduced the concept of biharmonic hypersurface in the Euclidean space. An isometrically immersed hypersurface $x : M^n \to \mathbb{E}^{n+1}$ is said to be biharmonic if $\Delta^2 x = 0$, where Δ is the Laplace operator. We study the L_r-biharmonic hypersurfaces as a generalization of biharmonic ones, where L_r is the linearized operator of the $(r+1)$th mean curvature of the hypersurface and in special case we have $L_0 = \Delta$. We prove that L_r-biharmonic hypersurface of L_r-finite type and also L_r-biharmonic hypersurface with at most two distinct principal curvatures in Euclidean spaces are r-minimal.