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Integral formula of Minkowski type and new characterization of the Wulff shape

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Abstract

Given a positive function F on S^n which satisfies a convexity condition, we introduce the r-th anisotropic mean curvature M_r for hypersurfaces in $\mathbb{R}^{n+1}$ which is a generalization of the usual r-th mean curvature H_r. We get integral formulas of Minkowski type for compact hypersurfaces in R^{n+1}. We give some new characterizations of the Wulff shape by use of our integral formulas of Minkowski type, in case $F = 1$ which reduces to some well-known results.

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