Ding, Qi; Jost, J.; Xin, Y. L.

Summary: We study the Dirichlet problem for minimal surface systems in arbitrary dimension and codimension via mean curvature flow, and obtain the existence of minimal graphs over arbitrary mean convex bounded $C^2$ domains for a large class of prescribed boundary data. This result can be seen as a natural generalization of the classical sharp criterion for solvability of the minimal surface equation by Jenkins-Serrin. In contrast, we also construct a class of prescribed boundary data on just mean convex domains for which the Dirichlet problem in codimension 2 is not solvable. Moreover, we study existence and the uniqueness of minimal graphs by perturbation.

MSC:
53A10 Minimal surfaces in differential geometry, surfaces with prescribed mean curvature
53A07 Higher-dimensional and codimensional surfaces in Euclidean and related $n$-spaces
53C42 Differential geometry of immersions (minimal, prescribed curvature, tight, etc.)

Keywords:
Dirichlet problem for minimal surface systems; minimal graphs; mean convex domains; mean curvature flow; Jenkins-Serrin criterion

Full Text: DOI arXiv

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