

Bryant, Robert L.

A duality theorem for Willmore surfaces. (English) Zbl 0555.53002
J. Differ. Geom. 20, 23-53 (1984).

A compact immersed surface in \mathbb{R}^3 is called a Willmore surface if it is a critical point for the functional $\int H^2 dA$. One special class of Willmore surfaces is obtained as follows: Start with a complete minimal surface M in \mathbb{R}^3 with finite total curvature having only planar ends. Then a suitable inversion takes M into a compact Willmore surface. The author proves that in fact all Willmore immersions $f : S^2 \rightarrow \mathbb{R}^3$ are obtained in this way. This reduces the classification of all Willmore spheres in \mathbb{R}^3 to a problem in algebraic geometry.

Reviewer: [U.Pinkall](#)

MSC:

[53A05](#) Surfaces in Euclidean and related spaces
[53A30](#) Conformal differential geometry (MSC2010)
[53C42](#) Differential geometry of immersions (minimal, prescribed curvature, tight, etc.)

Cited in **12** Reviews
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Keywords:

[compact immersed surface](#); [Willmore surface](#); [complete minimal surface](#); [classification](#)

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