Marilyn Daily
The double bubble conjecture in R^n

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In three-dimensional Euclidean space, a standard double bubble describes the familiar surface which is formed when two soap bubbles join to enclose two volumes. As Plateau empirically observed, such a surface consists of three spherical caps which meet at 120 degree angles. Analogously, a standard double bubble in n-dimensional Euclidean space is defined as a collection of three (n-1)-dimensional spherical caps which intersect at 120 degree angles along a common (n-2)-dimensional sphere. The double bubble conjecture states that in n-dimensional Euclidean space, a standard double bubble is the surface of minimal area which encloses two volumes. This conjecture has been proven for n=2, n=3, and n=4, but a general proof of the conjecture in higher dimensional spaces has remained elusive. I will describe recent progress toward a solution of the general problem in Rn.

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