

Minimal sets and cones of dimension 2 in R^4

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Since Jean Taylor's work, the local structure of the two-dimensional minimal (or almost minimal) sets (soap films) in 3-space is well known; they are locally equivalent, through C^1 diffeomorphisms, to a minimal cone. And there are exactly three types of minimal cones, which can easily be observed in soap films. In ambient dimension 4, the list of 2-dimensional minimal cones is not known yet, and for instance the fact that the almost orthogonal union of two 2-planes is minimal was only proved recently. We shall discuss this, and (rapidly) local regularity properties of two-dimensional almost minimal sets in large ambient dimensions.