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Nash problem for surface singularities is a topological problem

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SUMMARY

In the late 60's Nash proposed to study the bijectivity of a certain natural correspondence between the irreducible components of the space of arcs of an algebraic variety and the space of essential components of a resolution of its singularities.

The bijectivity was disproved by Ishii and Kollar for dimension 4 and higher. In this talk we address the problem for the surface case. We reformulate the problem in terms of branched covers and of wedges (which arc arcs inside the space of arcs), prove that the bijectivity of the Nash correspondence only depends on the topology of the singularity, and prove that if the bijectivity holds for singularities whose link is a rational homology sphere then it holds for any normal surface.

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