Isometric deformations and realizations of wave fronts

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Cuspidal edges and swallowtails are typical examples of wave fronts in the Euclidean 3space. The first fundamental form of a wave front induces a positive semi-definite symmetric tensor defined on a neighborhood of the non-degenerate singular point, which is called a Kossowski metric. Under such a intrinsic formulation of singularities, Kossowski proved that any real analytic Kossowski metric on a neighborhood of a generic singular point can be realized as the first fundamental form of a wave front.

In this talk, we give refinements of Kossowski's realization theorem to frontals (e.g. cuspidal cross caps) with non-vanishing limiting normal curvature.