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Title: Geometry of timelike minimal surfaces and null curves
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Session: abstract

Timelike surfaces in the 3-dimensional Lorentz-Minkowski space are surfaces with non-degenerate index 1 metrics. In contrast to surfaces in the 3-dimensional Euclidean space and spacelike surfaces in the Lorentz-Minkowski space, these surfaces have not always principal curvatures, that is, their shape operators are not always diagonalizable even over the complex field. For the case of timelike minimal surfaces, the problem of the diagonalizability of the shape operator is reduced to a problem of the sign of the Gaussian curvature. In this talk, we determine the sign of the Gaussian curvature of a timelike minimal surface from a viewpoint of null curves. Moreover, we also investigate the behavior of a timelike minimal surface with some kind of singularities.