Behavior of the Gaussian curvature of timelike minimal surfaces with singularities in the Lorentz-Minkowski 3-space.

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A timelike minimal surface in the Lorentz-Minkowski 3-space is a surface with a Lorentzian metric whose mean curvature vanishes identically. One of the most important differences between spacelike surfaces and timelike surfaces is the diagonalizability of the shape operator of a surface. For the minimal case, the diagonalizability of the shape operator corresponds to the sign of the Gaussian curvature of a timelike minimal surface. In this talk, we prove that the sign of the Gaussian curvature of any timelike minimal surface is determined only by the orientations of two null curves that generate the surface, and flat points are characterized by the degeneracies of these null curves. We also investigate the behavior of the Gaussian curvature near singular points of a timelike minimal surface which admits some kind of singular points. This talk is based on the preprint arXiv:1701.00238.