

Evolutes of curves in the Lorentz-Minkowski plane

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ABSTRACT

We can use a moving frame, as in the case of regular plane curves in the Euclidean plane, in order to define the arc-length parameter and the Frenet formula for non-lightlike regular curves in the Lorentz-Minkowski plane. This leads naturally to a well defined evolute associated to non-lightlike regular curves without inflection points in the Lorentz-Minkowski plane (cf. [1]). However, at a lightlike point the curve shifts between a spacelike and a timelike region and the evolute cannot be defined by using this moving frame. We introduce an alternative frame, the lightcone frame, that will allow us to associate an evolute to regular curves without inflection points in the Lorentz-Minkowski plane. Moreover, under appropriate conditions, we shall also be able to obtain globally defined evolutes of regular curves with inflection points. We investigate here the geometric properties of the evolute at lightlike points and inflection points. This is a joint work with S. Izumiya and M.C. Romero Fuster ([2]).

References

- [1] A. Saloom and F. Tari, Curves in the Minkowski plane and their contact with pseudo-circles, *Geom. Dedicata.* **159** (2012), 109–124.
- [2] S. Izumiya, M. C. Romero Fuster, M. Takahashi, Evolutes of curves in the Lorentz-Minkowski plane, Preprint. (2016).