
GEODESICS EQUATIONS OF SPACE–LIKE HELICOIDAL SURFACES IN MINKOWSKI SPACE–TIME

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ABSTRACT

Minkowski space–time serves as the geometric setting of special relativity and has been extensively studied from both mathematical and physical perspectives. Among the various surface classes in this space, helicoidal surfaces attract considerable attention because of their symmetry properties and rich geometric behavior. In this talk, we study the geodesics of space–like helicoidal surfaces in Minkowski space–time. Using the Euler–Lagrange equations, we derive the integral equations characterizing these geodesics. We also present several explicit examples via Mathematica. As some of the resulting integrals are difficult to evaluate analytically, Simpson’s formula is employed to obtain numerical approximations.

Keywords Geodesics · Euler–Lagrange equation · Helicoidal surface · Minkowski space–time

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