

# A study on the integral invariants of a closed spacelike ruled surface

**Tunahan Turhan**

(Süleyman Demirel University, Vocational School of Technical Sciences, 32260, Isparta)

*E-mail:* tunahanturhan@sdu.edu.tr

**Nihat Ayyıldız**

(Süleyman Demirel University, Faculty of Science and Letters, Department of Mathematics, 32260, Isparta)

*E-mail:* nihatayyildiz@sdu.edu.tr

In the present work, we study integral invariants of a closed spacelike ruled surface with respect to the integral invariants of the closed dual spacelike spherical curve. Moreover, by using the concepts and results on spherical spacelike curve in dual Lorentzian space, we give some relations about the pitch and the angle pitch of a closed spacelike ruled surface.

## REFERENCES

- [1] Ayşe Altın and Aysel Turgut Vanlı. *The pitch and the angle pitch of a closed nonnull ruled hypersurface whose generator is spacelike in  $R_1^{k+2}$* , Turkish Journal of Mathematics, 24: 327-334, 2000.
- [2] Barrett O'Neill. *Semi-Riemannian Geometry with Applications to Relativity*. Academic Press, London, 1983.
- [3] Emin Özyılmaz and Yusuf Yaylı. *On the closed spacelike developable ruled surface*. *Hadronic Journal*. 23: 439-456, 2000.
- [4] Emin Özyılmaz and Yusuf Yaylı. *On the integral invariants of a timelike ruled surface*. *Mathematical Computational Applications*. 6: 137-145, 2001.
- [5] Hasan Hilmi Hacisalihoglu. *On the pitch of a closed ruled surface*. *Mechanism and Machine Theory*. 7: 291-305, 1972.
- [6] Nihat Ayyıldız, *The integral invariants of a closed ruled surface in semi-Euclidean space*. PhD thesis, Süleyman Demirel University, The Institute of Science, Isparta, 2003.
- [7] Osman Gürsoy. *The dual angle of pitch of a closed ruled surface*. *Mechanism and Machine Theory*. 25: 131-140, 1990.
- [8] Osman Gürsoy. *On the integral invariants of a closed ruled surface*. *Journal of Geometry*. 39: 80-91, 1990.
- [9] Ömer Köse. *Contributions to the theory of integral invariants of a closed ruled surface*. *Mechanism and Machine Theory*. 32: 261-277, 1997.