

*Emine Özbey* (Süleyman Demirel University, Graduate School of Applied and Natural Sciences, Department of Mathematics, Isparta, Turkey)

*Nihat Ayyıldız* (Süleyman Demirel University, Department of Mathematics, Isparta, Turkey)

## A Study on Dual Lorentzian Spherical Motions

Dual Lorentzian spherical motions in dual Lorentzian space are examined. Dual Cartan matrix is obtained by examining the change of the dual Lorentzian geodesic trihedron  $\{\hat{X}, \hat{T}, \hat{G}\}$ . Then, the distribution parameters of the ruled surfaces which are determined by the dual Lorentzian geodesic trihedron in the lines space are found. Finally, the axes of curvature of the ruled surfaces generated by the dual Lorentzian geodesic trihedron in the moving and fixed spaces are obtained..

- [1] Akutagawa, K., Nishikawa, S., The Gauss map and spacelike surface with prescribed mean curvature in Minkowski 3-space, *Tohoku Math.*,1990, 42, 67-82.
  - [2] Birman, G.S., Nomizu, K., Trigonometry in Lorentzian geometry, *Am. Math. Mon.*, 1984, 91, 543-549.
  - [3] Guggenheimer, H., *Differential Geometry*, McGraw-Hill, New York, 1963.
  - [4] Gungor, M. A., Tosun, M., One parameter Lorentzian motion in Lorentz 3-space, *Kragujevac J. Math.*, 2008, 31, 95-109.
  - [5] Köse, Ö., On the dual spherical motions-I, *Mech. Mach. Theory*, 1982, 17(3), 185-190.
  - [6] O'Neill, B., *Semi-Riemann Geometry: with Applications to Relativity*.Academic Pres, New York, 1983.
  - [7] Tosun, M., Gungor, M. A., Okur, I., On the 1-parameter Lorentzian spherical motions and Euler-Savary formula, *Journal of Applied Mechanic*, 2007, vol. 74, no5, 972-977.
  - [8] Uğurlu, H.H., Çalışkan A., The study mapping for directed spacelike and timelike line in Minkowski 3-space  $\mathbb{R}_1^3$ , *Mathematical Computation Application*, 1996, 1(2), 142-148.
  - [9] Veldkamp, G.R., On the use of dual number, vector and matrices in instantaneous spatial kinematics, *Mechanism and Machine Theory*, 1976, 11, 141-156.
-