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НТБ ОНАХТ

On geometry of spatial kinematics in Lorentzian space

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In this work, we give geometric properties of mappings of spatial kinematics in Lorentzian space with the aid of dual number and split quaternion. Moreover, we get orthogonal rotation matrix A with respect to the Lorentzian Rodrigues parameters and the Lorentzian Euler parameters in such a space. Also, the mapping of spatial kinematics into points of a dual Lorentzian projective space are defined.

Rerefences

[1] Barrett O'Neill. Semi-Riemannian Geometry with Applications to Relativity. *Academic Press, London*, 1983.
[2] Bahram Ravani and Bernard Roth. *Mappings of Spatial Kinematics Journal of Mechanism, Transmissions and Automation in Design*. 106: 341-347, 1984.
[3] Eduard Study. Die Geometrie der Dynamen. *Leipzig*, 1903.
[4] Hellmuth Stachel. *Instantaneous Spatial Kinematics and the Invariants of the Axodes Proceedings Ball 2000 Symposium, Cambridge University Press, London*. 23:, 14 pages, 2000.
[5] J. Michael McCarthy. *The Instantaneous Kinematics of Line Trajectories in Terms of a Kinematic Mapping of Spatial Rigid Motion ASME Journal of Mechanism, Transmissions and Automation*. 109: 98-100, 1987.
[6] J. Michael McCarthy and Bahram Ravani. *Differential Kinematics of Spherical and Spatial Motions Using Kinematic Mapping Journal of Applied Mechanics*. 53: 15-22, 1986.
[7] Levent Kula and Yusuf Yaylı. *Split Quaternions and Rotations in Semi-Euclidean Space* E_2^4, *Journal of the Korean Mathematical Society*. 6: 1313-1327, 2007.
[8] Oene Bottema and Bernard Roth. Theoretical Kinematics. *Dover Publications, New York*, 1990.
[9] Osman Keçilioğlu, Sıdıka Ozkaldıand Halit Gündoğan. *Rotations and Screw Motion with Timelike Vector in* 3*-Dimensional Lorentzian Space, Advances in Applied Clifford Algebras*. 22: 1081-1091, 2012.
[10] Sıdıka Ozkaldıand Halit Gündoğan. *Cayley Formula, Euler Parameters and Rotations in* 3*-Dimensional Lorentzian Space, Advances in Applied Clifford Algebras*. 20: 367-377, 2010.

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