ANALELE ŞTIINŢIFICE ALE UNIVERSITĂŢII "AL.I. CUZA" DIN IAŞI (S.N.)
MATEMATICĂ, Tomul LX, 2014, f.2

GENERALIZED NULL BERTRAND CURVES IN MINKOWSKI SPACE-TIME

BY

FERDAĞ KAHRAMAN AKSOYAK, İSMAİL GÖK
and
KAZIM İLARSLAN

Abstract. Çöken and Çiftci proved that a null Cartan curve in Minkowski space-time $\mathbb{E}_1^4$ is a null Bertrand curve if and only if k_2 is nonzero constant and k_3 is zero. That is, the null curve with non-zero curvature k_3 is not a Bertrand curve in Minkowski space-time $\mathbb{E}_1^4$.

So, in this paper we defined a new type of Bertrand curve in Minkowski space-time $\mathbb{E}_1^4$ for a null curve with non-zero curvature k_3 by using the similar idea of generalized Bertrand curve given by Matsuda and Yorozu and we called it a null $(1,3)$-Bertrand curve. Also, we proved that if a null curve with non-zero curvatures in Minkowski space-time $\mathbb{E}_1^4$ is a null $(1,3)$-Bertrand curve then it is a null helix. We give an example of such curves.

Mathematics Subject Classification 2010: 53C50, 53B30.

Key words: Minkowski space-time, null curve, Frenet vectors, Bertrand curves.