

Povzetek

Vesolje - prostrana končnost ali neskončnost opevana in željena biti dosežena že stoletja. Nevidne sile nas kličejo k raziskovanju, razlaganju, potrjevanju, opisovanju ter osvajanju znank in neznank prostora okoli nas. Vesolja se je na različne načine dotaknilo že mnogo znanstvenikov, umetnikov, pisateljev in drugih. Raketne tehnologije, hiperbolična geometrija, problemi bivanja v vesolju, črvine, žirogrupe, znanstvena fantastika, 42 in z njimi Bolyai, Jules Verne, Albert Einstein, Werner von Braun, Lobačevski, Herman Potočnik Noordung, Stephen Hawking, Douglas Adams sestavljajo le peščico. V tem diplomskem delu želim izpostaviti predvesem teoretičen pogled na vesolje preko posebne relativnostne teorije Alberta Einsteina v kompletu s hiperbolično geometrijo odkrito s strani dveh matematikov Lobačevskega in Bolyaia. "Izkaže se namreč, da je teorija žirogrup popolna za opis posebne teorije relativnosti oziroma ima Posebna teorija relativnosti naravno interpretacijo v hiperbolični geometriji" [1]. Diplomsko delo tako poda definicije in izreke, ki privedejo do žirovektorskih prostorov, nato pa to interpretacijo uporabi kot podlago na primeru uporabe v Einsteinovi posebni teoriji relativnosti.

Math. Subj. Class. (2010): 20N99, 83A05.

Ključne besede:

Hiperbolična geometrija, Posebna teorija relativnosti, vrtnčenje, žirogrupa, žiroasociativnost, žirokomutativnost, žirovektorski prostor, žirotočka, žiropremica, relativistična hiperbolična geometrija.

Abstract

Universe - finity or rather infity desired to be dicovered for centuries. Invisible forces are pulling us towards reserches, explanations, descriptions and conquests of what is known and unknown around us. In the past, there were many scientists, artists, writers and others who dealt with space in many different ways. Rocket technologies, hyperbolic geometry, the problem of space travel, wormholes, gyrogroupes, science fiction, 42 and behind them Bolyai, Jules Verne, Albert Einstein, Werner von Braun, Lobačevski, Herman Potčnik Noordung, Stephen Hawking, Adams Douglas. But these are only a few. Through special theory of relativity and hyperbolic geometry dicovered by Lobachevsky and Bolyai I would like to introduce to you some of the theoretical points of view of space. Reading through my diploma, we will learn that we can find a natural interpretation of special theory of relativity in hyperbolic geometry. This thesis will take us through definitions and theorems and lead us to gyrovectors spaces which will then be used on an example: special theory of relativity.

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Keywords:

Hyperbolic geometry, special theory of relativity, gyration, gyrogroup, gyroassociative law, gyrocommutative law, gyrovectors space, gyro-point, gyroline, relativistic hyperbolic geometry.

Literatura

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