The Construction of the Shortest Trajectory on a 2D Surface Using the Level Lines Information

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In the modern world, the capabilities to develop extensive transport networks are totally or almost exhausted in most of the big cities. Therefore, the issues of the optimal patterns of networks, improvement of traffic management, optimisation of the transport route system are becoming especially important. The paper is dedicated to the method of constructing the shortest movement trajectory on a 2D surface, for which the formulas can be obtained according to GPS navigation or using the level lines information on the surface. The movement trajectory from point A to point B considers the angle of the greatest upturn (downturn) where the parts of the trajectory unfit for movement are eliminated. The mass, friction coefficient, tractive power of the car engine of the moving vehicle on the surface at each point of the trajectory are known. A numerical experiment was performed for the method.