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STRUCTURAL AND KINEMATIC SYNTETHESIS OF PAROLLEL SIX WHEELED ROVER

Abstract

Rasim Alizade1 (rasima@aztu.edu.az), Natig Javadov2, Vali Fataliyev1, Mehman Hasanov1 1Azerbaijan Technical University, AZ 1073, Baku, Azerbaijan 2National Aerocosmic Agency Abstract The problem of structural syntethesis is to determine the new transport chassis of the rover. The new structure of the bogi consists of a guiding seven link lever mechanism, the connecting coupler points of which describe straight lines with individual electromechanical drivers. The support link of the two – wheeled bogie is rigidly connected to the front lever of the balancing link (rocker). On the back lever of the rocker there is an electromechanical driver wheel. Two balancing suspensions are connected by an interboard differential to regulate the parallelism of the carrier platform when overcoming obstacles under the wheels. That rover have been developed for Mars and Moon surface and has six wheels with sismmetric structure for both sides. Using new formulas for independent loops, degree of freedom and for the motion of the moving rovers platform the problem of structural synthesis of parallel wheeled rover were solved. The purpose of kinematic synthesis were to determined for the values of bogie links. Using the decomposition approach and the method of the best approximation function (Chebyshev method), the volues of the lengths of the links of the bogie manipulator were determined.