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Modelling of mobility mechanism for motorized adjustable vertical platform (MAVEP) (Conference Paper)

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Abstract

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During the thermal vacuum, acoustic and vibration test procedure before launching, a satellite needs to be transported from one test area to another area using a mobile platform. To cater the demand, a special platform called Motorized Adjustable Vertical Platform (MAVeP) has been designed and assembled to ensure a smooth transfer operation and to reduce the handling risk that may jeopardize the satellite. This platform is able to move around and equipped with a height adjustable mechanism to elevate the satellite. This paper focuses on the design and modelling of MAVeP mobility. High accuracy and repeatability parking is an important criteria in the mechanical and electrical design. Kinematics and dynamic model of MAVeP mobility is described in this paper and verified experimentally. The result show that the kinematic and dynamic modelling errors are 0.08m respectively and MAVeP is able to move in a confined environment and desired. ©2018 IEEE.

SciVal Topic Prominence

Topic: Wheels | Robots | lunar rover

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Author keywords

Mecanum wheels Mobile satellite platform Mobile trolley Mobility mechanism Satellite testing

Indexed keywords

Engineering controlled terms: Automation Intelligent systems Kinematics Mechanisms Process control Satellites Testing

Engineering uncontrolled terms: Adjustable mechanisms Confined environment Kinematics and dynamics Mecanum wheels Mechanical and electrical Mobile satellite Mobile trolley Mobility mechanisms

Engineering main heading: Dynamics

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