

PARALLEL ROBOTS LIKE A PORTABLE REORIENTATION SYSTEM FOR TRACKING SATELLITES

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Keywords: Stewart platform, Satellite tracking, Numerical simulations, Precision, Sensitivity analysis.

Abstract: The conventional systems of reorientation of a satellite tracking antenna in portable satellite communications stations are based on serial robots, serial robots have three degrees of freedom and are composed of several kinematic chains joined by rotational articulations. These characteristics can affect the performance of satellite tracking since they limit their movements. For this reason, it is proposed a Stewart platform towards the reorientation system that can accept accelerations and higher speeds during its movement, support large loads that have a higher rigidity and precision to be considered by six actuators in parallel and finally, have a better follow-up of your six degrees of freedom. The demand for precision for satellite tracking is high, to determine the accuracy of the Stewart platform, a sensitivity analysis is performed that requires information on the design parameters that must be considered to perform a task with precision. Through the numerical simulations with the Matlab® software, it was found a range for maximum tolerances, varying the geometric parameters and varying the definition of the design applications to satisfy the demand in the accuracy of the application.