

ABSTRACT

The robot studied is a parallel robot with six links strapped by two platforms one fixed and the other mobile, the number of degrees of freedom that robot can be driven is six D.O.F. and be linked tied by (18) joints. These joints were spherical type to facilitate the process of movement and also contain links of sliding type (Prismatic) with six controlled actuators.

The main objective of this research is evaluated the phenomenon of singularity that occur during the movement of the moving platform.

First, the lengths of the links were calculated through the derivation of certain mathematical equation before the movement began by giving the coordinates of hypothetical, and are done by using a program (MathCad 14). Different presumed coordinates were again processed, the purpose of this process is to evaluate the lengths of the links in two different locations (position 1, position 2).

A equation of movement, and moving platform between the two points is derived. In this way, the lengths of links and the amount of movement are given to see the coordinates generated with the centre, movements were divided, and repetition used in order to traffic in singularity phenomenon required (or near it), this phenomenon has already been passed.

To make sure of the calculated results, the second method is used, a dynamic method derived equations for this purpose and solved through program (MathCad 14) and the singularity phenomenon is passed again proving the validity of the previous operation.

Then, the imaginary results that obtained were applied in the Jacobian Matrix, and that results were confirmed in a definitive manner, achieving the full objectives of this thesis.