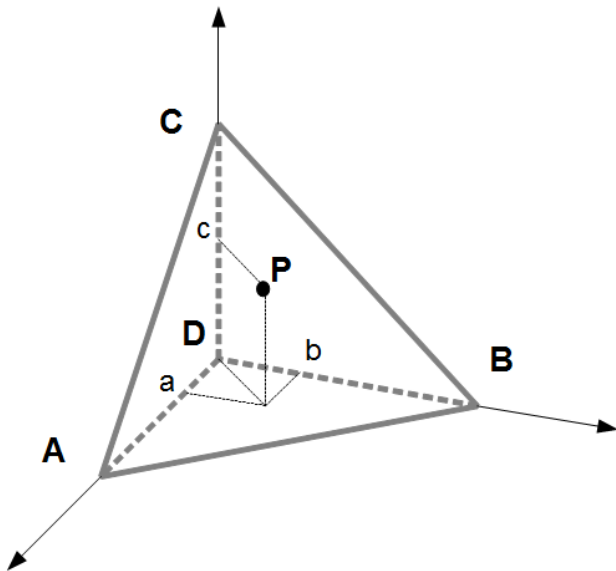


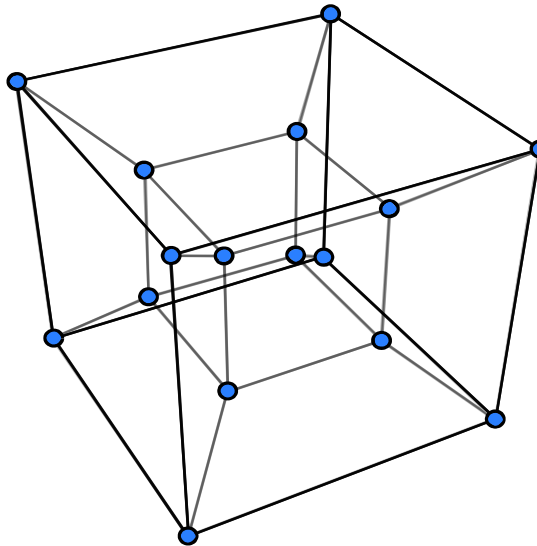
New Approach :

Calibration by means of configuration space (= space of joint states) transformations based on finite elements.

Patent WO/2013/014056



This method stands for a calibration of highest accuracy.



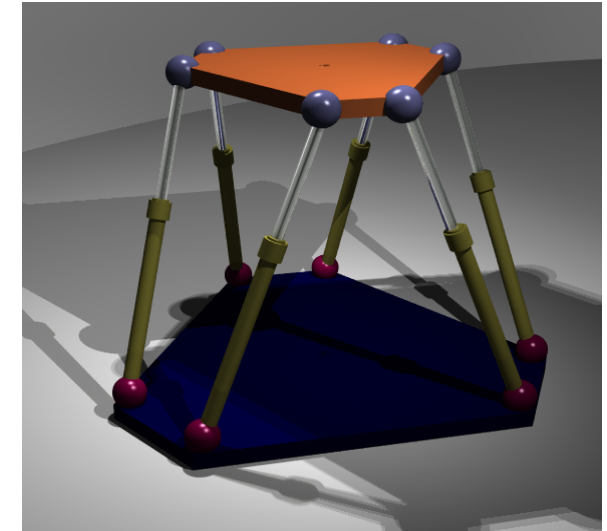
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TECHNOLOGIES



CALIBRATION

of

Parallel Manipulators

State of the art

Calibration of parallel kinematics is conventionally based on parameter identification. It aims at identifying the real geometric parameters, that are mainly responsible for pose deviations. By comparing ideal poses with measured poses real geometric parameters are desired to be identified in order to minimize pose deviations.

This method works fine when calibrating serial kinematics. Applied to parallel kinematics this method faces “improper posed problems”.

“Applied to parallel robot this method leads to calibration result that are in general disastrous.”^{x1}

¹ Pandilov, Z. & Dukovski, V.
ACTA TECHNICA CONVINIENSIS
Bulletin of Engineering, Tome IV, 2011, pp.
77-84. ISSN 2067-3809

Innovation

The transformation of the configuration space is not based on the identification of real geometric parameters that cannot be identified, anyway.

In contrast to that the transformed results of the calibration measurements can be used for pose corrections, without any approximation errors instead.

Deviations of geometric parameters will not cause high spectral deviations in joint space. Therefore, an error compensation based on finite elements is the means of choice.

So, pose deviations based on geometrical deviations can be compensated in an excellent manner, see the diagram besides.

Simulation results:

Typical results of simulation

Compensation of faulty geometrical parameters

MPI Stewart Platform

