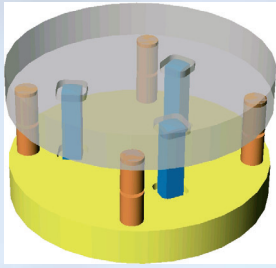
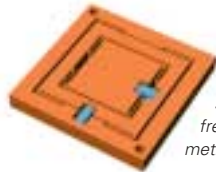


Parallel Kinematics/Parallel Metrology Why?



Stacked serial-kinematics two-axis nan positioning stages have significantly higher inertia, higher center of gravity and cannot correct for off-axis errors. Moving cables of the top platform induce friction and cause hysteresis.

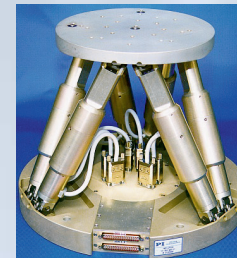
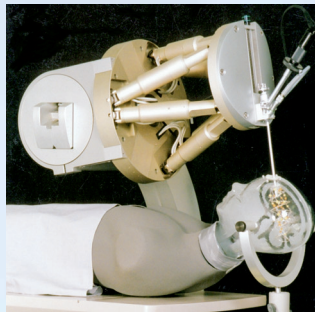
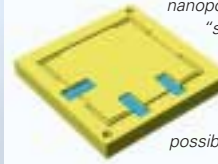


Basic design of a nested serial kinematics nan positioning stage. Better dynamic performance than stacking, but non-symmetric resonant frequencies and integrated parallel-metrology not feasible.

Nanopositioning equipment users often ask this question. What are the benefits? In a parallel-kinematics multi-axis arrangement, all actuators operate on a central moving platform in parallel. This is the only way to obtain identical resonant frequencies and dynamic behavior in both X and Y. In addition, parallel kinematics allows integrated parallel metrology.

Parallel metrology can “see” all controlled degrees of freedom simultaneously and compensate for the slightest off-axis motion in real time. The benefits are reduction of runout and off-axis errors, straighter motion and improved repeatability.

Basic design of a monolithic 3 DOF (X,Y, Theta-Z) parallel-kinematics piezo nan positioning stage. Integrated parallel metrology can “see” all controlled DOF’s simultaneously. Non-contact capacitive position sensors (not shown) directly measure the central moving platform compensating for the slightest off-axis motion in real time (active trajectory control). This is not possible with serial kinematics designs.



More information on parallel-kinematik Hexapod 6-Axis Precision Positioning Stages click <http://www.hexapods.net> <http://www.parallemic.org/Reviews/Review012.html>