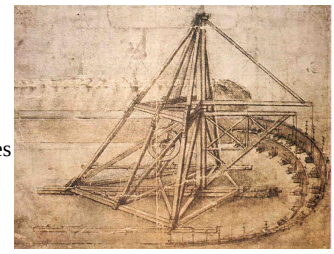
Kinematics
Organizers & Chairs: Jean-Pierre Merlet, Joel Burdick

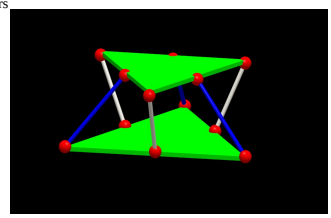
Kinematics' not dead!
J-P Merlet
INRIA, Sophia- Antipolis

- Position paper on the use of kinematics
- -still many open problem
- -for improving the performances of robots
- for the optimal design of robots



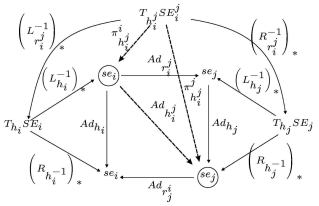
Self-Motions of Friffis-Duffy Type Parallel Manipulators
Manfred Husty[1] and Adolf Karger[2]
[1]Montan University Leoben and [2]Charles University

- Self-motion of a parallel manipulator, as shown in the figure to the right, is defined as finite mobility when all actuators are locked. Manipulators having this feature are of limited practical use.
- Using kinematic mapping we show that this special type of Stewart-Gough platform has a self motion in every point of its work space.
- The dgree of self motion is crucially dependent on the leg parameters and therefore on position and orientation of the platform. It can be from degree 4 to degree 40.
- It is believed that an enumeration of critical cases is essential for future design of parallel platforms .



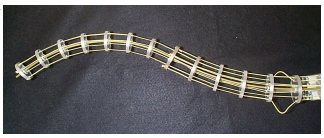
Non-Intrinsicity of References in Rigid Body Motions
Stefano Stramigioli and Herman Bruyninckx
Delft University of Technology

- Coordinate-free treatement of rigid body motions
- "Not intrinsicity" of references
- General commutation diagram explaining result
- Relation with Lie Groups



Kinematic Transformations for remotely-actuated planar continuum robots
Ian A. Gravagne and Ian D. Walker
Clemson University

- Examine Multiple-Section Continuous Backbone Robots
- Discuss Redundancy Resolution Techniques
- Apply Wavelet Theory to Aid in the Shape Control Problem
- Simulation Results and Images of Prototype Robots



Kinematic design of a humanoid robotic shoulder complex
J. Lenarcic[1], M. M. Stanisic[2] and V. Parenti-Castelli[3]
[1]The "Jozef Stefan" Institute, [2]University of Notre Dame and
[3]University of Bologna

- A parallel mechanism is used which replicates the function of the human shoulder
- An experimental mechanism was developed possessing four driven legs
- It provides the shoulder flexion, abduction, longitudinal rotation and elongation