System-Solving and Parallel Robots

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Abstract: System solving is a key problem in mechanism theory in particular for the kinematics of robots. In robot kinematics either the forward or inverse kinematic equations are, in general, known in analytical form and the main problem is to be able to solve the inverse problem i.e. either to find all the solution of the set of equations or one of them, being given some a-priori knowledge on the solution and with constraints on the computation time. B. Roth was probably the first to address the first problem using a dyalitic elimination procedure. In this paper we will summarise currently available solving methods that can be used to deal with this problem, that will be illustrated on one of the most complex problem known to date: the direct kinematics of parallel robots.

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