Structural Synthesis of 6 Bar Mechanisms as Mechanically Constrained 3R Chains

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Abstract

- In this paper, we consider the planar robot formed by 3R chain. To mechanically constrain the relative movement of the
joints so that the end-effector reaches a specified set of task positions, two additional links are added to the 3R chain. Graphical
representation is presented for enumeration process. Reverse transformation technique is developed to reconstruct 6-bar mechanisms
from their corresponding graphs. Structural synthesis process yields designs for seven different forms of a six-bar linkage the Watt I
and Stephenson I, II, and III six-bar linkages.

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