Structural Synthesis of Mechanically Constrained Single Loop 6-Bar Chain

Hasan Eleashy , Mohammed ElGayyar, M. A. N. Shabara

Abstract

In the present work, graphical enumeration technique is applied for structural synthesis of mechanically constrained planar parallel robot formed by single loop 6bar chain or two 3R chains. Two RR chains are added to the considered system to mechanically constraint the movement of its end-effector. Structural code has been proposed as a new systematic methodology to detect isomorphic graphs. Therefore, 32 non-isomorphic graphs are obtained from this enumeration process. All these graphs represent one-degree-of freedom eight-bar mechanisms. Reverse transformation process is presented to obtain the corresponding linkage diagrams for all results.

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