STRUCTURAL SYNTHESIS OF MECHANICALLY CONSTRAINED SINGLE LOOP 6-BAR CHAIN FROM DOUBLE 3R CHAIN

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Abstract

In the present work, graphical enumeration technique is applied for structural synthesis of mechanically constrained planar parallel robot formed by single loop 6-bar 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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