Synthesis of One Degree-Of-Freedom 6-Bar Linkages from Three Degree-Of-Freedom Open 4-Bar Chain Using Structural Code Technique

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Abstract

This paper presents a systematic methodology to convert planar 3 degree-of-freedom open 4-bar chain into planar 1 degree-of-freedom 6-bar linkages. This objective is achieved by adding 2RR chains to the original mechanism. Hence, these additional chains mechanically constrain the relative movement of the end-effector to reach a required set of task positions. Graphical enumeration technique is applied for structural synthesis of all possible 6-bar linkages. Structural code technique is introduced as a new method for structural isomorphism. The proposed methodology produces 7 different forms of 6-bar linkages.

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