

Structural-Parametric Synthesis of the Planar Four-Bar and Six-Bar Function Generators with Revolute Joints

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Abstract

This paper presents a structural-parametric synthesis of the four-bar and Stephenson II, Stephenson III six-bar function generating linkages. Four-bar linkage is formed by connecting two coordinate systems with given angles of rotation using a negative closing kinematic chain (CKC) of the RR type. Six-bar linkages are formed by connecting two coordinate systems using two CKCs: a passive CKC of the RRR type and a negative CKC of the RR type. The negative CKC of the RR type imposes one geometrical constraint to the relative motion of the links, and its geometric parameters are defined by least-square approximation. Passive CKC of the RRR type does not impose a geometrical constraint, and the geometric parameters of its links are varied. © 2023, The Author(s), under exclusive license to Springer Nature Switzerland AG.