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عنوان مقاله:

Optimal design of compliant mechanism withplanar 3-RRR structure

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خلاصه مقاله:

Stiffness is one of the most important mechanical characteristics, which can be defined as the capacity ofa mechanical system to sustain loads without excessive changes of its geometry. The stiffness of amechanism depends on several factors, such as actuators, material and of the links and mechanicaltransmission mechanisms. Nowadays, many mechanisms especially parallel ones are designed to gainsome of their mobility from the deflections of flexible members rather than from movable joints only.This group is widely known as compliant mechanisms in which compliancy in the joints and the links,affects the stiffness of the mechanism. In the present study, using Castigliano's theorem the stiffnessmatrix of a 3- RRR planar parallel mechanism with flexible links is derived. Then, using PSO method themechanism is optimized based on a mixed performance that is a weighted sum of global stiffness indexand its workspace

کلمات کلیدی:

Compliant parallel mechanism, Stiffness, Castigliano, Optimization

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