

## 考虑关节耗散的平面两自由度五杆机构动力学建模

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**关键词:** 闭链五杆机构 关节摩擦 耗散函数 广义耗散力 运动影响系数

**摘要:** 将摩擦力视为外部非保守力,提出了包含耗散函数的Appell方程。应用运动影响系数法进行机构的运动学分析;构建了机构系统的路里叶耗散函数,推导出广义耗散力。建立了包含耗散函数的平面闭链五杆机构的动力学模型,并提出了解算方法。逆动力学计算结果验证了动力学模型的正确性,仿真结果表明关节摩擦对机构运动的影响显著。The friction was disposed as an external non-inertia force, and a mended Appell equation including the friction of system was put forward. The kinematic characteristics of a planar closed-loop five-bar mechanism were analyzed by using the method of kinematic influence coefficient. The dissipation function of the mechanism system was proposed, then the generalized dissipation forces were deduced. The dynamics model of the mechanism which included the joint friction was proposed by means of the mended equation. And arithmetic was presented to solve these equations. The results of inverse dynamics testified the correction of the model. The outcomes of simulation indicated that joint friction has obvious influence on motion parameters of the mechanism.

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