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约束多体系统动力学分析的改进的离散零空间算法

Improved discrete null space method for dynamics analysis constrained multiboby systems

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中文摘要：

        通过对已有离散零空间矩阵计算方法的改进,构造了改进的离散零空间等效变换公式,该公式可不依赖于特定的积分方法,能简洁、方便的与多种数值积分方法相结合。基于改
式,提出了改进的离散零空间算法框架,并将该框架与一般变分积分法结合,构造了约束多体系统动力学分析的改进的离散零空间算法。通过曲柄滑块机构的数值实验,验证了改进的
空间等效变换公式的正确性,示例了其与数值积分算法的良好结合性,说明了改进算法的可行性和有效性。

英文摘要：

        Through improving the calculation method of the discrete null space matrix,an improved discrete null space equivalent transformation formula is
constructed. The proposed formula is not depended upon special integral method,and thus can easily and flexibly be combined with many kinds of integral
methods.Based on the improved formula,an improved discrete null space scheme is proposed,applying for dynamics analysis constrained multiboby systems.Then b
combination of the scheme and general variational integral,an improved discrete null space method for constrained multiboby systems is constructed.By the
numerical experiment of the mechanism of slider-crank,it is demonstrated that the improved discrete null space equivalent transformation formula is correct
can smoothly be combined with integral methods,and that the improved discrete null space method is feasible and effective.

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