

混合离散变量的高维多目标灰色稳健优化设计

罗佑新 廖德岗 车晓毅 刘奇元

湖南文理学院

关键词: 混合离散变量 稳健设计 灰色绝对关联度 多目标优化 灵敏度分析

摘要: 提出了一种基于混合离散变量灵敏度分析的高维多目标稳健性设计方法,建立了基于灵敏度分析产生附加目标函数的2种高维多目标稳健优化设计模型,应用灰色绝对关联度求解。该模型与方法能合理地处理优化设计中混合离散变量的取值问题,引入了混沌移民算子对基本遗传算法进行了改进,并开发了混合离散变量优化的灰色复合遗传算法程序GSCHGA。工程设计实例表明,该算法对优化设计问题无特殊要求,具有较好的普适性,而且程序运行可靠,全局收敛能力强。A method for robust design was presented based on sensitivity analysis with hybrid discrete variables, and two multi-objective robust optimization design models were established for robust optimization design based on adjunctive function of sensibility analysis. The models were solved with absolute degree of grey incidences. The models and method could reasonably deal with value adopting problems of hybrid discrete variables in optimization design. A chaos emigration operator was introduced to carry out improvement on the fundamental genetic algorithm, and the grey compound genetic algorithmic program GSCHGA for the multi-objective optimization of hybrid discrete variables was developed. Finally, the engineering design example shows that this algorithm has no special requirements on the characteristics of optimal designing problems, good universal adaptability, reliable operation of program, and strong ability of overall convergence.

[查看全文 \(请使用Adobe Acrobat 6.0版本浏览\)](#) [返回首页](#)

[引用本文](#)