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电力系统

基于改进免疫算法的机组组合优化

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摘要：

电力系统机组组合问题是一个高维、离散、非线性的工程优化问题。提出了一种改进的免疫算法用于机组组合优化。该算法便于考虑不同类型机组启停的特性，采用抗体片段表示不同的机组组合状态，并构造了由同一机组的抗体片段集合形成的抗体片段记忆库，加快了满足抗原匹配要求的抗体的形成速度。在最优解搜索过程中，采用一种考虑亲和度的变异方法，自适应地调整搜索范围。算例表明该方法收敛性好，结果稳定，有较强的实用意义。

关键词：

Unit Commitment Based on Improved Immune Algorithm

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Abstract:

Unit commitment is a high dimensional, discrete and nonlinear engineering optimization problem. An improved immune algorithm is proposed for unit commitment. Using the proposed algorithm, the start/stop characteristics of different types of units can be conveniently considered; the antibody segment is utilized to represent different unit commitment states, and a memory library of antibody segments formed by a set of antibody segment of one and the same unit is constructed to accelerate the formation of antibody to meets the matching requirement of antigen. During the searching of optimal solution a mutation method considering affinity is adopted to adaptively adjust the search space. Results of calculation example show that the proposed algorithm can offer stable unit commitment results and its convergence is satisfied, so it is practicable.

Keywords:

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