

电力系统

差分进化算法在考虑暂态稳定约束的最大输电能力计算中的应用

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摘要:

利用改进差分进化算法构造了考虑暂态稳定约束的最大输电能力问题的优化模型。首先通过引入模拟退火策略和时变交叉概率常数思想, 保证了算法既有较强的全局搜索能力又有较快的收敛速率和搜索精度; 然后引入适应度函数法来处理模型中的约束, 有效避免了常规罚函数法中罚因子确定难的问题, 提高了目标值的精确性。IEEE 30节点算例系统验证了所提算法的准确性和有效性。

关键词:

Application of Differential Evolution Algorithm in Total Transfer Capacity Calculation With Transient Stability Constraints Being Considered

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Abstract:

By use of modified differential evolution (DE) algorithm, an optimal model for total transfer capacity (TTC) is constructed in which the transient stability constraints are taken into account. Firstly, by means of leading in simulated annealing strategy and the thinking of time-varying crossover probability constant, it is ensured that the proposed algorithm possesses stronger global searching ability, faster convergence speed and higher searching accuracy; then to process the constrains in the model, the fitness function method is led in, thus the problem that it is difficult to determine penalty factors in traditional penalty function can be effectively avoided and the precision of target value is improved. The accuracy and effectiveness of the proposed algorithm are verified by the calculation results of IEEE 30-bus system.

Keywords:

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