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电力系统

双重不确定性组合法评估敏感设备电压暂降故障概率

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摘要：

针对现有敏感设备电压暂降敏感度评估方法中仅考虑系统侧或设备侧的不确定性问题，提出了一种设备电压暂降故障概率的双重不确定性评估方法。该方法首先对系统电压暂降、设备电压耐受能力进行分析，分别用模糊变量和随机变量描述其不确定性，然后引入I 截集的概念将复杂的双重不确定性概率求解问题转化为普通概率求解问题，简化了计算。以IEEE 30节点系统为例进行仿真，并与蒙特卡罗随机模拟结果进行比较，证明了文中所提方法的正确性。

关键词：

Twofold Uncertainty Combination Based Probability Evaluation of Failures Occurred in Voltage Sensitive Equipments Due to Voltage Sag

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Abstract:

In view of the defect in existing methods to evaluate sensitivity of voltage sag for voltage sensitive equipments that only the uncertainty at system side or equipment side is considered, a twofold uncertainty combination based method is proposed to evaluate the probability of failures occurred in these equipments due to voltage sag. In the proposed method, firstly both system voltage sag and voltage withstand ability of equipments are analyzed, and their uncertainties are respectively described by fuzzy variables and stochastic variables; then by means of leading in the concept of l-cut set, the solution of complex twofold uncertainty probability is transformed into the problem of solving general probability, thus the computation is simplified. Taking IEEE 30-bus system for example, and comparing the simulation results with those by Monte-Carlo method, the correctness of the proposed method is validated.

Keywords:

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