自动化

改进蚁群算法在复杂配电网故障区段定位中的应用

张颖，周韧，钟凯

长沙理工大学 电气与信息工程学院，湖南省 长沙市 410114

摘要：

蚁群算法在配电网故障区段定位中应用效果良好，但具有搜索时间长、计算速度慢等缺点，为此对蚁群算法进行了改进。首先构造了动态适应配电网拓扑结构的开关函数，其次提出了蚁群信息素初值设置方法，引入解的扰动规则，最后确定了蚁群算法应用于多电源条件下配电网故障区段定位的方法。算例结果验证了该算法在计算速度和容错性方面的优势。

关键词：

Application of Improved Ant Colony Algorithm in Fault-Section Location of Complex Distribution Network

ZHANG Ying, ZHOU Ren, ZHONG Kai

School of Electrical and Information Engineering, Changsha University of Science and Technology, Changsha 410114, Hunan Procince, China

Abstract:

Although good application effect of locating faulty section in complex distribution network can be attained by applying ant colony algorithm, however there are also disadvantages such as too long search time and computation time. For this reason, traditional ant colony algorithm should be improved. Firstly, a switching function that can dynamically adapt to topological structure of distribution network is constructed; then a method to set the initial values of ant colony's pheromone and the disturbance rule of the solution are led in; finally the method to apply the improved ant colony in fault section location of distribution network with multi power supplies is determined. The advantages of the improved ant colony algorithm in calculation speed and error tolerance are verified by results of calculation example.

Keywords:

通讯作者：周韧

作者简介：

作者Email：zhouren0305@126.com

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