

电力系统

基于Dempster-Shafer证据理论的无功/电压控制分区

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摘要:

鉴于电网规模不断扩大, 分区并行计算可提高计算效率, 提出了一种基于D-S证据融合的电网无功电压控制分区方法。首先根据电气距离计算基本概率分配的分区支持度和模糊样本相似度的分区支持度, 再对这两种支持度进行D-S融合, 提高分类可靠性, 形成客观分区证据。如果某节点客观分区证据不充分, 还可以考虑专家群的意见综合评判, 融合主客观综合证据得到更符合实际的分区结果。通过对IEEE-118节点系统的分区测试, 证明了所提分区策略是可行和有效的。

关键词:

Network Partitioning for Reactive Power/Voltage Control Based on Dempster-Shafer Evidences Fusion

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Abstract:

In view of the extension of power system, partitioning parallel computing can improve computational efficiency, in allusion to partition network for reactive power/voltage control, a new way based on subjective and objective evidences D-S Fusion for Partitioning is proposed in this paper. First, calculate partition support degrees of basic probability assignment and fuzzy sample similarity degree based on electrical distance, and then fuse these two support degrees for D-S evidences fusion which form objective evidence based on the electrical distance. If a node objective partition has enough evidence, the partition results are obtained directly. Otherwise, the objective evidence is comprehensive evaluated considering the expert group's advice. Thus conclusive result of network partitioning for reactive power/voltage control which fuse subjective and objective evidence is obtained. The simulation to IEEE-118 test systems shows that the proposed method is feasible and effective.

Keywords:

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