

## 电力系统

### 基于开关控制的电力系统广域阻尼控制器

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#### 摘要:

研究了广域阻尼控制器以改善互联电力系统的阻尼和动态稳定性, 提出了发电机励磁系统的广域控制算法。该算法用开关控制实现来自远方发电机的转速反馈控制, 且考虑了通信时滞。该算法能减小通信时滞的不利影响。励磁系统的广域阻尼控制器以该算法为基础且包含超前-滞后网络。通过4机2区域系统的三相短路故障的数字仿真, 测试了该广域阻尼控制器的性能。仿真结果表明, 该广域阻尼控制器能改善互联电力系统的动态稳定性。

**关键词:** 广域控制 开关控制 电力系统稳定 通信时滞 广域测量系统(WAMS)

### Switch Control Based Wide-Area Damping Controller of Power Systems

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#### Abstract:

A wide-area damping controller is researched to improve damping and dynamic stability of interconnected power grids, and a wide-area control algorithm of generator excitation system is proposed. In the proposed algorithm, the switch control is utilized to implement the feedback control of rotating speed from remote generators while the time-delay is taken into account. Using the proposed algorithm the adverse effect of time-delay can be suppressed, meanwhile the communication delay is considered. Through digital simulation of a 4-machine 2-region system, the performance of this wide-area damping controller is tested. Simulation results show that the dynamic stability of interconnected power grids can be improved by this wide-area damping controller.

**Keywords:** wide-area control switch control power system stability communication delay wide-area measurement system(WAMS)

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