

Coordinated design of multiple controllers for damping power system oscillations

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Abstract-

This paper details an approach for designing multiple controllers for damping power system electromechanical oscillations. The approach is based on the first-order sensitivities of the eigenvalues of the power system linear model. It is divided into two steps: the independent design of the phase compensation networks of the controllers and the coordinated design of the gains of the controllers. Power system stabilizers of generators and damping controllers of FACTS devices can be designed using the proposed approach. The approach is illustrated in a small-scale power system that exhibits both local and inter-area oscillations.

Index Terms- Electromechanical oscillations, damping controllers. eigenvalue sensitivities, coordinated design

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