A Multiobjective Damping Function for Coordinated Control of Power System Stabilizer and Power Oscillation Damping

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Abstract : This paper deals with the coordinated tuning of the Power System Stabilizer (PSS) controller and Power Oscillation Damping (POD) Controller of Flexible AC Transmission System (FACTS) in a multi-machine power systems. The coordinated tuning is based on the critical eigenvalues of the power system and a model reduction technique where the Hankel Singular Value method is applied. Through the linearized system model and the parameter-constrained nonlinear optimization algorithm, it can compute the parameters of both controllers. Moreover, the parameters are optimized simultaneously obtaining the gains of both controllers. Then, the nonlinear simulation to observe the time response of the controller is performed.