Abstract

The dynamics of a multi machine power system are both nonlinear and interconnected. The equilibrium of such a system is typically unknown and uncertain, and the controllers within are also subject to physical limitations. In this paper, application of nonlinear H8 robust power system stabilizer design is presented for a three machine system. Based on the latest development of nonlinear H8 robust control theory, a control design is applied to stabilize the linearized uncertain system using Glover-McFarlane's loop shaping design procedure for a three machine system. Guidance for setting the feedback configuration for loop shaping and synthesis are presented. The results of simulation studies are presented.

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**Index Terms**

Electrical Power Systems

**Key words**

closed loop gain

H8

loop shaping

linearized model

multi machine
open loop gain

power system stabilizer

robust controller

state space