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 H∞ robust power system stabilizer design is presented for a three machine system. Based on the latest development of nonlinear H∞ 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