

# Design of a robust and indirect adaptive fuzzy sliding mode power system stabilizer using particle swarm optimization

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## Description

This work presents an indirect adaptive fuzzy sliding mode power system stabilizer that is used to damp out the low frequency oscillations in power systems. The proposed controller design is based on an adaptive fuzzy control combining a proportional integral control and sliding mode control. The fuzzy logic system is used to approximate the unknown system function and using the particle swarm optimization technique to optimize parameters proportional integral control to eliminate the chattering action in the sliding mode control. Using Lyapunov synthesis, adaptation laws are developed to make the controller adaptive to changes in operating conditions of the power system. The nonlinear simulation studies show the successful performance of the proposed stabilizer.