

# Abstract

**Alaa Eldin Ahmed Khalil**

## **Optimal Tuning of Lead-Lag and Fuzzy Logic Power System Stabilizers Using Particle Swarm Optimization.**

Abstract In this paper, the problem of simultaneous and coordinated tuning of brushless exciter and lead-lag power system stabilizer parameters of a single infinite bus power system is considered. This problem is formulated as an optimization problem, which is solved using particle swarm optimization technique. Also in this paper, the optimal tuning of a fuzzy logic power system stabilizer using particle swarm optimization method is carried out. Simulation results show the effectiveness of the proposed particle swarm optimization-based lead-lag power system stabilizer and particle swarm optimization-based fuzzy logic power system stabilizer to damp the oscillation of multimachine system and work effectively under variable loading and fault conditions. 2007 Elsevier Ltd. All rights reserved.

Keywords: Particle swarm optimization Power system control Lead-lag power system stabilizer Fuzzy logic power system stabilizer