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A NOVEL PSO ALGORITHM FOR OPTIMAL POWER SYSTEM STABILIZER

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ABSTRACT

The affirmative outcome of PSS on Low Frequency Oscillations (LFO) damping is apparently clear. Appropriate designing of PSS can increase the affirmative outcome. As a result, to improve the effectiveness, this project submits a different scheme to reduce LFO. As the trouble of PSS design can be taken into account as a multi-objective optimization problem, this project proposes an improved Particle Swarm Optimization (IPSO) algorithm, which is a novel heuristic optimization algorithm, to improve the searching space and union speed of the Conventional PSO (CPSO) algorithm. A proper and inclusive fitness function is also introduced to obscure the extensive operating terms. In that way, this algorithm is working to recognize the optimal parameters of PSS for Single Machine related to Infinite Bus (SMIB) system by minimizing the fitness function. Simulation results indicate the superiority of the proposed algorithm.

KEYWORDS: Damping Torque, Stability, Swarm Intelligence, LFO, PSO, PSS, SMIB