

**ROBUST TUNING OF POWER SYSTEM STABILIZERS IN MULTIMACHINE
POWER SYSTEMS**

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Abstract: This paper demonstrates the robust tuning of power systems stabilizers for power systems, operating at different loading conditions. A classical lead-lag power system stabilizer is used to demonstrate the technique. The problem of selecting the stabilizer parameters is converted to a simple optimization problem with an eigenvalue-based objective function, which is solved by a tabu search algorithm. The objective function allows the selection of the stabilizer parameters to optimally place the closed-loop eigenvalues in the left-hand side of a vertical line in the complex s -plane. The effectiveness of the stabilizers tuned using the suggested technique, in enhancing the stability of power systems, is confirmed through eigenvalue analysis and simulation results.