

This paper presents a design of a power system damping controller using partial right eigenstructure assignment. The eigenstructure assignment technique selects a set of closed-loop eigenvalues along with their right or left eigenvectors. The selection of eigenvectors offers extra flexibility which is exploited in this paper by designing a robust damping controller which provides the required damping under multiple operating conditions. A multi-input controller is used to increase the degrees of freedom available for the design. Remote measurements available from synchronised phasor measurements are also considered. The problem is formulated as a multi-objective nonlinear optimization problem and solved using the nonlinear simplex function in MATLAB. The proposed technique is used to design a robust power system stabilizer for the interconnected New England New York simplified power system model. Four contingencies are selected as additional operating conditions. The designed controller is validated using a nonlinear simulation.