Grey Prediction Fuzzy PID Stabilizer Design for Multimachine Power System

This paper addresses a new design of two-level power system stabilizers. It integrates optimal reduced order model, grey system theory and fuzzy PID mode control techniques. The reduced order model is used to decompose the overall power system into separate subsystems based on the output variables. The grey predictor is adopted to make the next-step prediction into the future for the output states of the power system. At the global level, the global gains are generated from the output variables to minimize the effect of interaction between subsystems. At the local level, the fuzzy PID mode control techniques is used to design the subsystem control signals based on the predicted values. The effectiveness of this stabilizer is evaluated and an example of the multimachine power system is given to illustrate the advantages of the proposed method.