



FRACTIONAL ORDER CONTROLLER BASED FUZZY CONTROL ALGORITHM FOR SWITCHED RELUCTANCE MOTOR

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Abstract- The doubly salient mechanical structure and switching characteristics of switched reluctance motor (SRM) led to torque ripple, low dynamic performance and other problems when using conventional control algorithm in speed control method. In view of the fractional PID control algorithm has strong robustness and advantage of fuzzy control, and it does not depend on the precise mathematical model, the paper proposed a control algorithm based on fuzzy fractional order PID torque control algorithm. On the basis of fuzzy rules, using this control algorithm to adaptive SRM torque control, and using speed deviation and deviation changing rate as its input, the SRM turn torque ripple is smaller by changing proportional coefficient, integral order and differential order of the fuzzy inference adaptive fractional order PID controller. The simulation results indicate that the control algorithm is feasible, torque ripple of switched reluctance motor is smaller, dynamic response is better.

Index terms: fuzzy control, fractional order PID, switched reluctance motor, speed control.