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Comparative Analysis between Adaptive type-1 Fuzzy Field-Oriented Control and hybrid Sliding Mode-Backstepping Control of a Double Star Induction Machine (DSIM)

Rahali Hilal, Bilal Djamal Eddine Cherif, Zeghlache Samir and Benyettou Loutfi

Laboratory of Electrical Engineering, University of M'sila, Algeria,
E-mail: hilal.rahali@univ-msila.dz, cherif.bilaldjamaleddine@univ-msila.dz, samir.zeghlache@univ-msila.dz, loutfi.benyettou@univ-msila.dz

Abstract: In this work we have opted for a comparative study between two different control strategies for the double star induction machine (DSIM). The DSIM is fed by two cascaded two-level voltage inverter using the pulse-width modulation (PWM) control strategy. The two hybrid nonlinear controls studied and applied are increasingly oriented towards the application of modern control techniques, the first is the Adaptive type-1 Fuzzy Field-Oriented Control based on PI regulators by rotor flux orientation and uses a rotor flux estimator and with a hybrid control on sliding mode control synthesized by backstepping, to regulate the speed of a dual star induction machine DSIM in order to compare the performances of the system using these two control methods.

Keywords: DSIM, Fuzzy Field-Oriented Control, sliding mode Control, backstepping, Inverter.

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