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Design and performance analysis of an iterative flux ... Flux Sliding Mode Observer Design Abstract— A sliding-mode observer for the rotor flux and speed of an induction motor is presented in this paper. It is also proposed another observer that is a modification of the original one to reduce the errors and improve the obtained speed results. The observer is used in a sensorless Indirect Field Oriented Control (IFOC). Design and implementation of a sliding-mode observer of ... To improve the performance of permanent magnet synchronous motor (PMSM) drives, a sensorless control scheme based on a novel iterative flux sliding-mode observer (IFSMO) is proposed in this paper. Two major drawbacks of the conventional sliding-mode observer (SMO), namely, chattering phenomena and high-order harmonics, are discussed. Design and performance analysis of an iterative flux ... Flux Sliding-mode Observer Design 3.1 Design of the observer To achieve the flux linkage ψ , the proposed observer as (10) is designed based on the stator current model (9). where, “ $\hat{\cdot}$ ” denotes the estimated quantities, $\text{sgn}(\cdot)$ is the sign function, K is the designed parameter, and the (10) is the conventional SMO. Flux Sliding-mode Observer Design for Sensorless Control ... The Lyapunov sliding-mode observer (LSMO) feedback designs are performed for the nonlinear AMB dynamics due to control voltage

saturation. The nonlinear observers are designed to estimate the magnetic flux and rotor mass velocity. The observer designs are incorporated in equivalence implementation of the nonlinear state-feedback controller. Lyapunov Sliding-Mode Observers With Application for ... Design and performance analysis of an iterative flux sliding-mode observer for the sensorless control of PMSM drives. Ye S(1). Author information: (1) School of Aerospace Engineering, Beijing Institute of Technology, Beijing 100081, China. Electronic address: yesc_bit@163.com. Design and performance analysis of an iterative flux ... frame, a fourth order sliding mode observer is developed for both flux and parameter estimation. Two sliding surfaces representing the stator current amplitude and a combination of estimated flux and current errors are used to enforce the flux and current estimates to their real values. The observer does Sliding mode flux observer with online rotor Sliding mode flux observer with online rotor parameter ... magnet synchronous motor (PMSM) drives using a voltage-based flux linkage model and an adaptive sliding mode variable structure. We propose a new observer design that employs an improved sliding mode reaching law to achieve better estimation accuracy. An Improved Flux Observer for Sensorless Permanent Magnet ... Rotor speed is also determined using a rotor flux sliding-mode (SM) observer which is capable of rotor flux space vector and rotor speed simultaneous estimation. In addition,

stator and rotor... Design and Experimental Test of a Speed/Flux Sliding Mode ... Design and performance analysis of an iterative flux sliding-mode observer for the sensorless control of PMSM drives Published on Apr 1, 2019 in *Isa Transactions* 4.34 · DOI : 10.1016/j.isatra.2019.04.009 Copy DOI Design and performance analysis of an iterative flux ... based on a sliding-mode current observer. Ensuring the convergence of the current observer, the equivalent control [15] is produced. Then, it is used in the flux estimation to determine the flux along d and q axes. Finally, the rotor speed and rotor time constant are estimated by using estimated flux and the sliding function. Design and implementation of a new sliding-mode observer ... Abstract— A new close loop current model flux observer is de-signed to estimate the rotor flux, position and velocity of an in-duction machine. The current observer includes carefully designed sliding mode functions which are derivative of the fluxes along the d and q axes. Therefore, when the estimated current converges to A new current model flux observer for wide speed range ... After that, a sliding mode observer is proposed to estimate the motor speed, the rotor flux, the angular position of the rotor flux and the motor torque from monitored stator voltages and currents. The proposed sliding mode observer provides very good performance for both low and high speed motor operation. Sliding-mode observer design for sensorless vector control ... Sliding mode observers have

unique properties, in that the ability to generate a sliding motion on the error between the measured plant output and the output of the observer ensures that a sliding mode observer produces a set of state estimates that are precisely commensurate with the actual output of the plant. Sliding mode observers - Association for Computing Machinery Industrial Application of a Second Order Sliding Mode Observer for Speed and Flux Estimation in Sensorless Induction Motor 3 As the mechanical position and magnetic variables are unknown, d-q frame is well appropriate for sensorless observer based control design. Industrial Application of a Second Order Sliding Mode ... Sliding mode observers also have attractive noise resilience properties that are similar to a Kalman filter. Another approach is to apply multi observer, that significantly improves transients and reduces observer overshoot. Multi observer can be adapted to every system where High Gain Observer is applicable. State observer - Wikipedia This new sliding-mode observer is designed by using a hyperbolic tangent function instead of sign function together with a variable boundary layer, and the new adaptive law is constructed according to the back electromotive force model to reinforce dynamic performance and the robustness of system. NEW ADAPTIVE SLIDING-MODE OBSERVER DESIGN FOR SENSORLESS ... observer, but the signals still include high-frequency components. Therefore, they cannot be used directly for an estimate the rotor position and speed. In a conventional sliding mode observer, a low pass filter is used for filtering operation, which causes the phase lag that depends on the cut frequency and the input signal angular one. Direct Thrust Force and Flux Control of a PM-Linear ... This paper presents the design and analysis of a sliding mode observer for the flux magnitude of the induction machine. The design is done using a modified model of the motor in the rotating ... Design and analysis of a sensorless sliding mode flux ... The sliding mode observer is compared with a similar open-loop flux observer-it is shown that the proposed design is much more robust to parameter variations. The theoretical derivations are supported with simulations and experimental waveforms. The Lyapunov sliding-mode observer (LSMO) feedback designs are performed for the nonlinear AMB dynamics due to control voltage saturation. The nonlinear observers are designed to estimate the magnetic flux and rotor mass velocity. The observer designs are incorporated in equivalence implementation of the

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[An Improved Flux Observer for Sensorless Permanent Magnet ...](#)

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