



On a Class of Manifolds for Sliding Mode Control and Observation of Induction Motor

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Abstract: The aim of this paper is to develop a general class of manifolds on which sliding mode flux observation and control of induction motors are achieved. For flux-speed tracking, we consider the case where the sliding surface is formed by the derivative of the output tracking error and a function of this error. For flux observation, the surface is a function of the estimated error. At first, we will derive the properties that must be fulfilled by the above class of manifolds in order to attain the control and observation objective. Then, we design the control law and the observer gains to make the proposed manifolds globally attractive and invariant. Simulations results are given to highlight the performances of the proposed control method.

Keywords: *Induction motor; manifold; sliding mode control; sliding observer; robustness; global stability.*

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