General Rotor-Flux Oriented Vector Control Systems of induction machine-based drives

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Abstract
The flux estimation for sensorless induction motor drives. The linearized model of the speedadaptive full-order flux observer is applied to help choosing the observer gain and the speed-adaptation gains. It is shown that the linearized model reveals potential instability problems that are difficult to find by other means. An observer gains and a method to vary the speed-adaptation gains in the field-weakening region are proposed. Experimental results show stable operation in a very wide speed rangel. applies the linearized model of the observer to help selecting the observer gain and the speed-adaptation gains. The induction motor model and the speed-adaptive flux observer are first defined. Then, the linearized model of the speed-adaptive observer is introduced. Based on the model, an observer gains and a method to vary the speed-adaptation gains in the field-weakening region are proposed. Finally, a control system based on the rotor flux orientation is described and experimental results are presented. That is, only the rotor flux—not the stator current—is estimated. Used for correction is the error between the actual stator voltage vector and an estimate, scaled with the observer gain



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