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异步电动机的无速度传感器直接转矩控制系统研究

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SPEED-SENSORLESS DIRECT TORQUE CONTROL SYSTEM OF AN INDUCTION MOTOR

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摘要

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摘要 推导了直接转矩控制 (DTC)速度观测器的数学模型,研制了无速度传感器的 DTC系统,对该系统稳态和瞬态试验,在 100 r/min以上速度精度达 0.5%,电磁转矩从 0上升到额定转矩只需 0.86ms,它的高性能和高可靠性使它能在飞机上得到广泛应用。

关键词: 转矩控制 无速度传感器 交流调速 异步电动机

Abstract: A mathematics model of speed observer of direct torque control (DTC) system is derived, and a DSP-based speed-sensorless DTC system is designed and tested. It exhibits extremely fast torque response, which is 0.86ms for a nominal torque step. The accuracy of shaft speed estimate is very good, which reaches 0.5% above 100r/min. This system is used extensively in aircraft due to its excellent performance and reliability.

Keywords: direct torque control speed sensorless AC speed modulation induction motor

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