



AIUB DSpace Publication Details

Title:	Minimal Order Bilinear Observer for High Performance Control of Induction Motor Taking Core Loss into Account		
Author(s) Name:	Mohammad Abdul Mannan, T. Murata, J. Tamura and T. Tsuchiya		
Contact Email(s):	mdmannan@aiub.edu		
Published Journal Name:	Transactions of the SICE (Society of Instrument and Control Engineers)		
Type of Publication:	Journal		
Volume:	40	Issue:	8
Publisher:	Society of Instrument and Control Engineers		
Publication Date:	2004		
ISSN:	0453-4654		
DOI:	https://doi.org/10.9746/sicetr1965.40.815		
URL:	https://www.scilit.net/article/ec019bf33549fa6e4f3d5656f8e1be18		
Other Related Info.:	Page 815-824		





AIUB DSpace Publication Details

Abstract:

This paper presents a minimal order rotor current and rotor flux observer for an indirect field-oriented induction motor drive with consideration of core loss due to eddy current from the viewpoint of nonlinear observer using bilinear model. The state equations for an induction motor were derived which behaved as a bilinear system in terms of the product of input and state variables. The design of the proposed observer is based on Lyapunov's stability method whose estimation error converges to zero exponentially irrespective of the inputs. We have also proposed a control system by using multi-input and multi-output optimal regulator theory. The estimated rotor current and rotor flux are fed back to the multi-input and multi-output optimal regulator. Simulation results are presented to show the validity of the proposed controller as well as rotor current and rotor flux estimation of induction motor drive.

