Squirrel Cage Induction Motor: Stability Analysis

Assignment

Submission: on or before 21.11.2022 05.00 PM

Case Study

Machines Parameters	Value	Per Unit Value
Horse Power (Hp)	50 hp	-
Voltage (V_L)	460 V	-
Frequency (Hz)	60 Hz	-
Stator Resistance (r_s)	0.087 Ω	0.015336
Stator Reactance (X_{ls})	0.302 Ω	0.053235
Mutual Reactance (X_M)	13.08 Ω	2.30569
Equivalent Rotor Resistance (r'_r)	0.302 Ω	0.040191
Equivalent Rotor Reactance (X'_{lr})	0.228 Ω	0.053235
Moment of Inertia (J)	1.662 Ω	-

M. B. Uddin, M. N. Pramanik and S. A. Reza, "Low frequency stability study of a three-phase induction motor," *2007 7th International Conference on Power Electronics*, 2007, pp. 1115-1120

Ref. Section 5.10 of "Electrical Machine Dynamics" by Sengupta for State space model example.
Various currents and rotor speed are to be taken as State variables