EE595S Lab 8
Switching Frequency Effects in PMSM Drives
Fall 2003

This assignment only needs to be worked by on-campus students.

Objective

- Explore Methods To Incorporate Rising Resistance and Falling Inductance into PMSM Model
- Determine Effect of Rising Resistance / Falling Inductance on Drive Performance

Assignment

- Develop a Medium Bandwidth PMSM Model and Macro
- Develop a Synchronous Current Regulator Model
- Compare Predictions of Standard Model and Medium Bandwidth Model to Hardware Measurements

Conditions for Comparison

- DC Voltage: 200 V
- Mechanical Speed: 1700 RPM
- Torque Command: 1.5 Nm
- Synchronous Current Regulator:
  - You Choose Parameters
- Modulator: Delta (60 KHz Sampling)

Deliverables

- *.csl, *.cmd, and *.mac files you develop
- Results from study
  - Show A-phase Current Comparison
  - Show A-phase Ripple Comparison
  - Plot / Analyze Results So Critical Comparison Can Be Made
- Short report including
  - Comparison of results of models (how do they differ in predictions; and in CPU requirements)