Adaptive Control of Over-actuated Systems: Case Studies with AC Machinery and Drive Systems

Objectives:

• Develop methodology for the simultaneous identification and control of over-actuated systems
• Identify metrics for optimizing parameter identification (e.g., optimal frequency for PE) and the trade-off between identification and control objectives

Approach:

• Develop controllers for various types of AC machines
• Use knowledge and intuition gained from these applications to develop a general methodology

SMPM Equivalent Circuit

Induction Machine Equivalent Circuit

Torque Step, Adaptation OFF

Torque Step, Adaptation ON