

PLECS WORKSHOP

Advanced Modeling and Simulation of Power Electronic Systems

Liverpool John Moores University, 6th October 2025

08:30	Registration
09:00	Introduction to PLECS ▶ General use of PLECS Blockset and PLECS Standalone ▶ Instantaneous switching ▶ Variable and fixed-step operation Exercise: Modeling a switched-mode power supply
10:30	Break
11:00	Solver Settings ▶ Definition of stiff and non-stiff systems ▶ Explicit and non-explicit solvers ▶ Stability domains ▶ Accuracy considerations, step size control ▶ Proper handling of discontinuities, zero-crossing detection
12:00	Lunch
13:00	Introduction to Thermal Simulation ▶ Switching & conduction loss descriptions ▶ Combined electrical-thermal simulation ▶ Determining loss values from data sheets Exercise: Thermal modeling of a buck converter
14:30	Break
15:00	Bringing Simulation and Real Hardware Together (Code Generation Workflow in PLECS) ▶ Automatic code generation for microcontrollers ▶ Plant code generation for the RT Box ▶ Nanostep®, FlexArray and CPU solver engines ▶ Real-time simulation with 4ns step size for MHz switching Demonstration: HIL testbench with microcontroller and RT Box
16:00	Q&A
16:15	End of day
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