

PLECS WORKSHOP

Advanced Modeling and Simulation of Power Electronic Systems

Helmut-Schmidt-Universität / Universität der Bundeswehr, 11. April 2025

08:30	Registration
09:00	Introduction to PLECS <ul style="list-style-type: none">▸ 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 <ul style="list-style-type: none">▸ 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 <ul style="list-style-type: none">▸ 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) <ul style="list-style-type: none">▸ 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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