

# PLECS WORKSHOP

Advanced Modeling, Simulation and Code Generation of Power Electronic Systems  
University of Stuttgart, June 26<sup>th</sup>, 2024

08:30	Registration
09:00	<b>Introduction to PLECS</b> <ul style="list-style-type: none"><li>▶ General use of PLECS</li><li>▶ Instantaneous switching</li><li>▶ Variable and fixed-step operation</li></ul> Exercise: Modeling a switched-mode power supply
10:30	Break
11:00	<b>Solver Settings</b> <ul style="list-style-type: none"><li>▶ Definition of stiff and non-stiff systems</li><li>▶ Explicit and non-explicit solvers</li><li>▶ Stability domains</li><li>▶ Accuracy considerations, step size control</li><li>▶ Proper handling of discontinuities, zero-crossing detection</li></ul>
12:00	Lunch
13:00	<b>Introduction to Thermal Simulation</b> <ul style="list-style-type: none"><li>▶ Switching &amp; conduction loss descriptions</li><li>▶ Combined electrical-thermal simulation</li><li>▶ Determining loss values from data sheets</li></ul> Exercise: Thermal modeling of a buck converter
14:30	Break
15:00	<b>Code Generation for Embedded Targets</b> <ul style="list-style-type: none"><li>▶ Automatic code generation for microcontrollers</li><li>▶ Controller testing</li></ul> Demonstration: Automatic code generation with the PLECS Coder
15:30	<b>Real-Time Simulations</b> <ul style="list-style-type: none"><li>▶ Hardware-in-the-Loop (HIL)</li><li>▶ Running simulations on the CPU and FPGA</li></ul> Demonstration: Sub-cycle averaging with the RT Box
16:30	End of Workshop
Contact	Plexim GmbH, +41 44 533 51 00, <a href="mailto:info@plexim.com">info@plexim.com</a>
Location	University of Stuttgart, Fakultätsraum Elektrotechnik und Informationstechnik, Elektrotechnisches Institut ET11, Room 4.282, Pfaffenwaldring 47, 70569 Stuttgart, Germany