

Winter Semester 2025/2026

MSEI Seminar Leistungselektronik und elektrische Antriebe

MSPE Seminar Power Electronics and Electrical Drives

Registration

If you wish to participate in the seminar, please email the supervisor listed for your chosen topic. Each topic can be assigned to at most two students. You will receive a confirmation or rejection within 2–3 days. If accepted, the supervisor will register you for the corresponding module in TUMonline. If not accepted, you may contact a different supervisor. [Please contact only one supervisor at a time.](#)

Objectives

By the end of the module, students will:

- independently familiarise themselves with a specified topic in power electronics and electrical drives,
- write a technical report, and
- present and discuss their work in a scientific seminar.

Assessment

- Regular meetings with supervisors on progress and approach (20%)
- Presentation (15 min) + discussion (5 min) (40%)
- Written paper in IEEE style, 5 pages (template on [GitLab](#)) (40%)

Timeline

- Topics released: **10 October 2025**
- Kick-off meeting: **24 October 2025**, 11:30, Room 3999 (for students with confirmed topics and supervisors)
- Report deadline: **23 January 2026**
- Presentations: **30 January 2026**, 13:30, Room 3999

Coordination and general matters

Wei Tian - Coordinator

Email: wei.tian@tum.de

(For organisational questions only. Do not submit seminar applications here. Please apply directly to the supervisor of your chosen topics.)

List of topics (updated 15.10.2025)

Topic	Supervisor
Min. ZVS Current Required for 3L-Boost Converter	Christos Leontaris christos.leontaris@tum.de
Characterization and Modelling of the Nonlinear Capacitances in SiC MOSFETs	Tianxu Cao tianxu.cao@tum.de
• <u>Model-Guided Modulation for Matrix-Type AC-DC DAB Converter Considering AC-Side Capacitor Voltage Ripple</u> • <u>Dual Matrix Converter-Based Wireless Power Transfer System</u> • <u>Novel Soft Switching Modulation Strategy for Three-Phase Matrix-DAB Converter Considering the Parasitic Parameters of Switching Devices</u> • <u>Full-Bridge and Half-Bridge Topology Morphing Method for A Wide Output Voltage Range Based on Optimal Trajectory Control</u>	Eduardo de Souza eduardo.desouza@tum.de
Optimized pulse pattern modulation for a 4-level converter	Gean Maia de Sousa gean.sousa@tum.de
• Specific Harmonic Suppression for PMSM Drives • Low Frequency Modulation Methods for Power Converters	Yuanxiang Sun yuanxiang.sun@tum.de
• Computational control method in multi-level converters • Advanced speed/torque estimation method on electric drive systems	Yongdu Wang yongdu.wang@tum.de
High Frequency Common-Mode Choke Modelling	Xingqi Yin xingqi.yin@tum.de
Modelling and Control of Synchronous Reluctance Machines	Stefan Klaß stefan.klass@tum.de

<u>GaN-based Motor Drive for Humanoid Robots</u>	Wei Tian wei.tian@tum.de
Betriebsführungsstrategie: Reinforcement Learning, und klassische Regelungstechnik im Vergleich	Alexander Baumann (TH Ingolstadt) els.hlu@ed.tum.de
Comparative Analysis of Induction and Permanent Magnet Synchronous Machines under Multilevel Inverter Operation: Efficiency, Harmonic Sensitivity, and Modelling	Stefan Asam (TH Ingolstadt) els.hlu@ed.tum.de