

Winter Semester 2024/2025

MSEI Seminar Leistungselektronik und elektrische Antriebe

MSPE Seminar Power Electronics and Electrical Drives

Registration

If you are interested in participating in the seminar, please email the stated supervisor about the topic that interests you. Each topic will be assigned to a maximum of two students. You will get a confirmation or rejection email from the supervisor within 2-3 days. In case of a positive answer, the supervisor will register you to the corresponding module in TUMonline.

(In case of a negative answer, you can contact other supervisors. [Please do not contact several supervisors at the same time.](#))

Objectives

After completion of the module, the students are expected

- to familiarise themselves independently with specified topics in the field of power electronics and electrical drives,
- to write a technical report on their work and
- to present and discuss their work in a scientific seminar with professional audiences.

Evaluation

- Regular meetings with supervisors on the progress of the work and the procedure (20%)
- Presentation of the results (15 minutes) followed by a discussion (5 minutes) (40%)
- Written research paper in IEEE style (5 pages) (40%) (download template from [GitLab](#))

Procedure

- Topics released on **11 October 2024**
- Kick-off meeting on **25 October 2024**, at 11:30 in room 3999 (for students with confirmed topics and supervisors)
- Report submission before **31 January 2025**
- Presentation on **07 February 2025** at 13: 30 in room 3999

Coordination and general topics

Wei Tian

Email: wei.tian@tum.de

(Only to be contacted for organisational questions. Please apply for the seminar directly to the supervisor of the topic(s) that interest(s) you)

List of topics (updated on 16 October 2024)

Topic	Supervisor
Modellierung und Regelung von Synchronreluktanzmaschinen Modelling and Control of Synchronous Reluctance Machines	Stefan Klaß stefan.klass@tum.de
Modelling and Control of AC Machines	Julien Cordier julien.cordier@tum.de
Modulation Strategy Comprising TCM with Frequency Limit and DPWM for Fast Switching GaN-Inverters	Christos Leontaris christos.leontaris@tum.de
1. Evaluation of Modulation Methods for 3-Level Converters 2. DC Link Voltage Balancing for Multilevel Converters 3. Advanced Filtering and EMI Reduction Techniques in Inverters	Oleksandr Pavlenko o.pavlenko@tum.de
Market Research of Open-source SiC Inverters	Eyke Aufderheide eyke.aufderheide@tum.de
1. Active EMI Filter for Power Electronics 2. Magnetics Design for High Power and High-Frequency Applications	Xingqi Yin xingqi.yin@tum.de
1. Thermal management of PCB 2. Control of Trip Phase Shift (TPS) Dual Active Bridge (DAB)	Danqing Cao Danqing.cao@tum.de
Harmonic Control of High-Power Grid-connected Converters	Gean Maia de Sousa gean.sousa@tum.de
Research on Intelligent Control Strategies for Power Converters	Yongdu Wang yongdu.wang@tum.de
Modelling and Control of Isolated DC/DC Converters	Dehao Kong dehao.kong@tum.de
Grid Impedance Estimation (Identification) for Grid-connected Converters	Yuanxiang Sun yuanxiang.sun@tum.de

Double-Pulse-Test for SiC MOSFETs	Tianxu Cao tianxu.cao@tum.de
Survey on Energy Balancing Methods for Modular Multilevel Converters (MMC)	Wei Tian wei.tian@tum.de