

Winter Semester 2023/2024

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 then 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 familiarize 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 in **September 2023**
- Kick-off meeting on **27 October 2023** at 16:00 (for students with confirmed topics and supervisors)
- Presentation on **12 January 2024** at 16:00
- Report submission before **01 February 2024**

Coordination and general topics

Wei Tian

Email: wei.tian@tum.de

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

List of topics (updated on 19.10.2023)

Topic	Supervisor
Thermal Modelling for Magnetic Components in Power Electronics	Xingqi Yin Danqing Cao xingqi.yin@tum.de danqing.cao@tum.de
Modelling and Control of AC Machines	Julien Cordier julien.cordier@tum.de
<ul style="list-style-type: none"> a. Encoderless Control of Synchronous Reluctance Machines (SynRM) b. Magnetic Characterisation of a Synchronous Machine 	Stefan Klaß stefan.klass@tum.de
<ul style="list-style-type: none"> a. Isolated Three-Phase Matrix-Type DAB PFC Rectifier b. Multiphysical Characterization of Medium-Frequency Power Transformers c. Coupled Inductors Applied to Multiphase PWM Converters d. Analytical Calculation of the Conduction and Switching Losses of the Conventional Matrix Converter and the (Very) Sparse Matrix Converter e. ZVS of Power MOSFETs Revisited 	Christos Leontaris christos.leontaris@tum.de
Online Estimation of Junction Temperature in Power Semiconductors	Gean Maia de Sousa gean.sousa@tum.de
Modelling and control of Modular Multilevel Converter (MMC)	Wei Tian wei.tian@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
Modeling of Switching Loss of Power Semiconductors	Qiwu Wang qiwu.wang@tum.de

Research on Intelligent Control Strategies for Power Converters

Yongdu Wang
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