

## Einladung zu einem Promotionsvortrag

Vortragender:	Mohammed Abdallatif
Thema:	Deep Learning-Assisted Online Controlled Islanding of Transmission Systems
Inhalt:	<p>Modern transmission systems are efficient but remain vulnerable to cascading failures that can cause widespread blackouts. Controlled islanding (CI) partitions the grid into stable, self-sustaining islands and serves as a critical last-resort mitigation strategy. However, existing CI methods are often deterministic or designed for offline analysis, which limits their effectiveness in dynamic, real-time operations. This thesis presents a novel multi-stage, data-driven framework for controlled islanding that addresses these limitations. The approach integrates online system monitoring and automatic fault detection, followed by generator coherency identification and a computationally efficient spectral-clustering algorithm to obtain the initial islanding solution. This solution is subsequently expanded into multiple alternative splitting strategies through a boundary-space expansion method, providing greater flexibility for Transmission System Operators (TSOs). The resulting strategies are further validated against operational constraints and system stability requirements. A pretrained deep learning model ranks these alternatives based on predicted stability metrics (e.g., frequency deviations and power imbalances), offering prioritized decision support for system operators. Validation on standard IEEE test systems demonstrates the framework's ability to detect severe faults, form coherent islands, and produce prioritized, feasible splitting strategies within operational time constraints. The deep learning model's generalized design further enhances its applicability across diverse power system topologies, without reliance on specific system configurations or model parameters.</p>
Termin:	Donnerstag, 21.05.2026, 08:30 Uhr
Ort:	Raum 2.7. Institut ie3, Martin-Schmeißer-Weg 12, 44227 Dortmund Meeting Link: <a href="https://meet.google.com/zeb-jmwd-dgm">meet.google.com/zeb-jmwd-dgm</a>
Vortragsleitung:	Prof. Dr.-Ing. Jürgen Götze

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