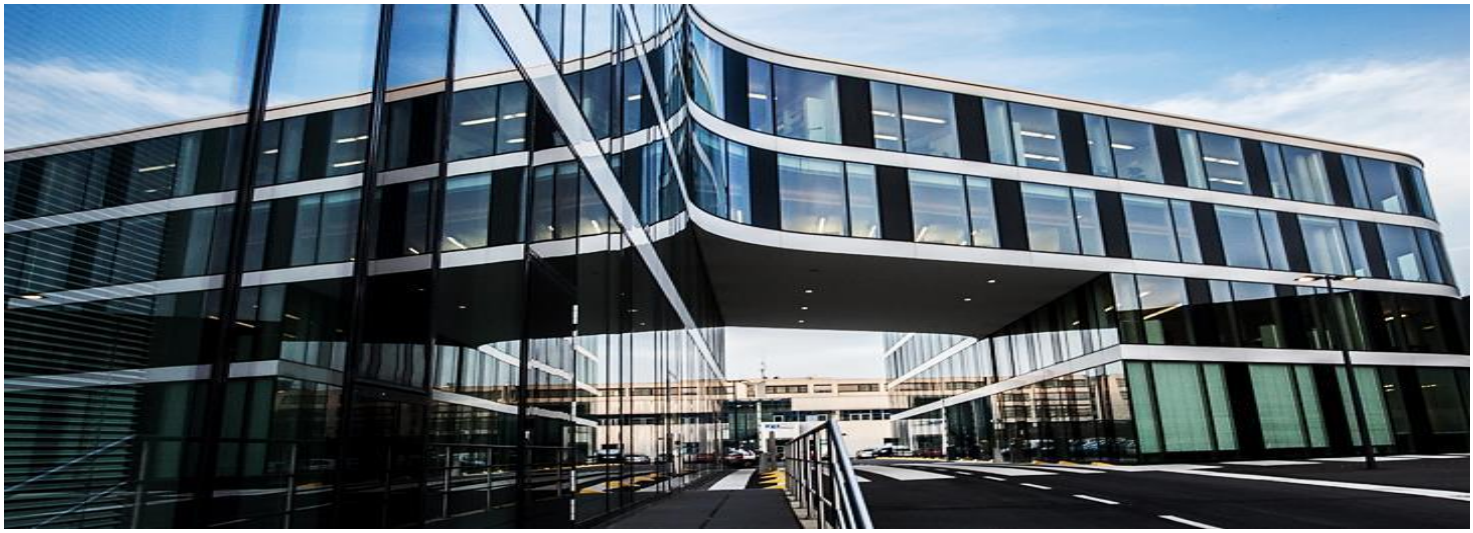
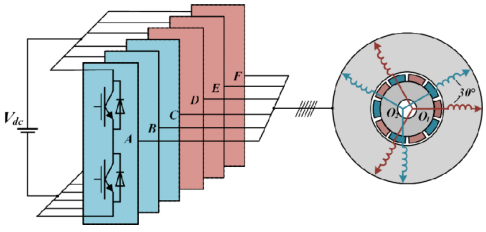


Lehr- und Forschungsgebiet Mechatronik in mobilen Antrieben | RWTH AACHEN UNIVERSITY

cmp Center for Mobile Propulsion | RWTH AACHEN UNIVERSITY

The Teaching and Research Area for Mechatronics in Mobile Propulsion is located between the domains of mechanical and electrical drive components as well as control algorithms. Under the guidance of Professor Jakob Andert, the institute researches innovative, environmentally friendly vehicle drives and particularly emphasizes electrification and simulation-based development methods.

The automotive sector is currently undergoing a major transformation that is in particular affecting the drive technology. Electrification is gaining enormous relevance as one of the key technologies to reduce or avoid emissions. Regardless of the specific technology, a steadily increasing complexity of both the hardware and the associated control algorithms is leading to the evolution of modern drives towards software-intensive, embedded mechatronic systems.



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Bachelor Thesis / Master Thesis

Start: from now

☒ Faculty 1 - Mathematics, Computer Science and Natural Sciences
☒ Faculty 4 - Mechanical Engineering
☒ Faculty 6 - Electrical Engineering and Information Technology

Unified Model and Vector Space Decomposition Control Algorithm for Dual Three-Phase AC Machines

Dual three-phase (DTP) AC machines are increasingly favored by industry and in the field of automotive electric drives due to their reduced phase currents and enhanced fault tolerance. Vector space decomposition control algorithm is seen as an interest research topic for DTP AC machine drives. However, the machine type varies due to different rotor flux excitation methods and the control algorithm should also change accordingly. The target of this research topic is to investigate on a unified model of DTP AC machine, which is suitable to be applied to a plurality of typical AC machines: Induction Machine, Reluctance Synchronous Machine, and Permanent Magnet Synchronous Machine. Also, the Model in-the-loop and Hardware in-the-loop for DTP control algorithm would be implemented and verified.

Your tasks / your profile:

- You are studying mechanical engineering, electrical engineering or a similar subject
- Good knowledge in electric machine or control theory
- Experience with MATLAB/Simulink or Finite Element Method

Would you like to know more?

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