



# Investigation of Compact Electric Machine Topologies for Automotive Applications

PhD student: Konstantina Bitsi

Period: 06-2017 to 06-2022



- Objectives:

- In-depth electromagnetic and thermal analysis of candidate electrical machine topologies suitable for automotive applications
- Optimization based on the required specifications
- Experimental validation

- Funding: Energimyndigheten

- Results so far:

- K. Bitsi, O. Wallmark and S. Bosga, "An Induction Machine with Wound Independently-Controlled Stator Coils," 2019 22nd International Conference on Electrical Machines and Systems (ICEMS), Harbin, China, 2019, pp. 1-5.
- K. Bitsi, O. Wallmark and S. Bosga, "Many-objective Optimization of IPM and Induction Motors for Automotive Application," 2019 21st European Conference on Power Electronics and Applications (EPE '19 ECCE Europe), Genova, Italy, 2019, pp. P.1-P.10.
- K. Bitsi, M. E. Beniakar, O. Wallmark and S. G. Bosga, "Preliminary Electromagnetic Sizing of Axial-Flux Induction Machines," 2020 XIV International Conference on Electrical Machines (ICEM), Gothenburg, 2020, to be published.
- O. Wallmark, K. Bitsi and S. G. Bosga, "A Transient Model of WICSC and ISCAD Machines Based on Permeance Networks," 2020 XIV International Conference on Electrical Machines (ICEM), Gothenburg, 2020, to be published.
- O. Wallmark and K. Bitsi, "Iron-Loss Computation Using Matlab and Comsol Multiphysics," 2020 XIV International Conference on Electrical Machines (ICEM), Gothenburg, 2020, to be published.

