

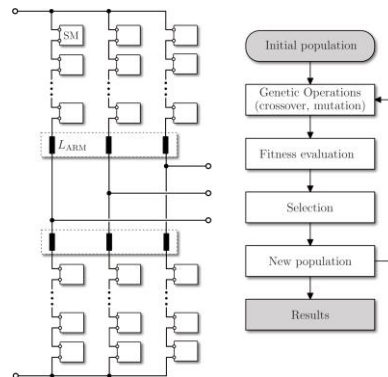
# Utilization of Genetic Algorithm in the Optimum Design of the Arm Inductance in a Modular Multilevel Converter

Bachelor's/Master's Thesis

Contact: Luis Camurca  
 Email: lc@tf.uni-kiel.de

Prof. Dr.-Ing. M. Liserre

**Abstract**—The proper design of the arm inductor of a modular multilevel converter considers size, losses, weight and isolation requirement as parameters, which have conflicting objectives. Genetic algorithms have been demonstrated to be particularly effective to determine solutions of such multi-objective systems and this work intends to use GA for the design of these components and compare them to “Brute-Force” algorithms.



**Background**—As machine learning and automatization are gaining ground in power electronics, more elegant techniques are being used for to achieve faster and better results. One of these are genetic algorithms, which fits extremely well to multi-objective problems, often appearing in the design of power electronic components, converters and systems. In this work this technique shall be used specifically for the design of an inductor, where maximum allowable losses and volume are part of the input constraints. Afterwards, this should be compare to more simple techniques considering running time, complexity and optimization result..

**Objectives:**

- **Analysis of Losses and sizing of inductor Modular Multilevel Converter**
- **Development of algorithms for optimization of inductor design**

**Type of the Work:**

- Theoretical;
- Simulations

**Language of the Thesis:**

- German/English

**Connected Project:**

None

