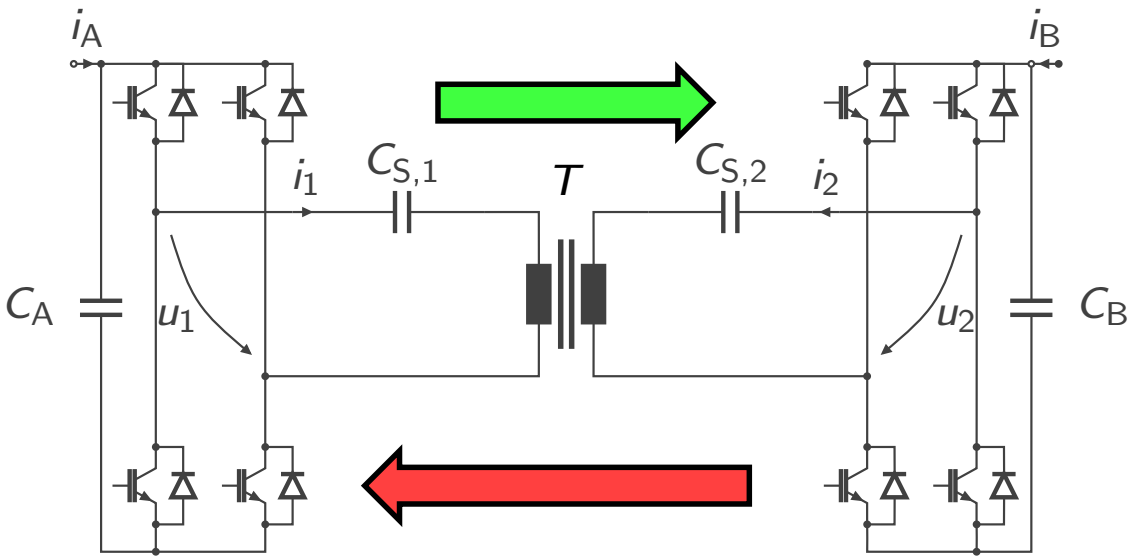
Modelling and Control of Resonant Converters

DC-Power Grids are becoming increasingly important. In contrast to AC-grids, galvanic isolation cannot be achieved by using transformers solely. One method to overcome this problem is using resonant converters. These converters also use a transformer T, however it is located in between to full bridges. The transformers stray inductances form a resonant circuit with the capacitors $C_{S,1}$ and $C_{S,2}$. Since the converter is operated near to the resonant frequency, the current flowing through the transformer is approximately sinusoidal. The main research topics include:

- Modelling of resonant converters.
- Simplify this model for usage in the controller design process.
- Compare several different controller strategies, e.g. changing the operational frequency.
- Compare the controllers static and dynamic performance.
- Test those controllers using a hardware prototype.



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