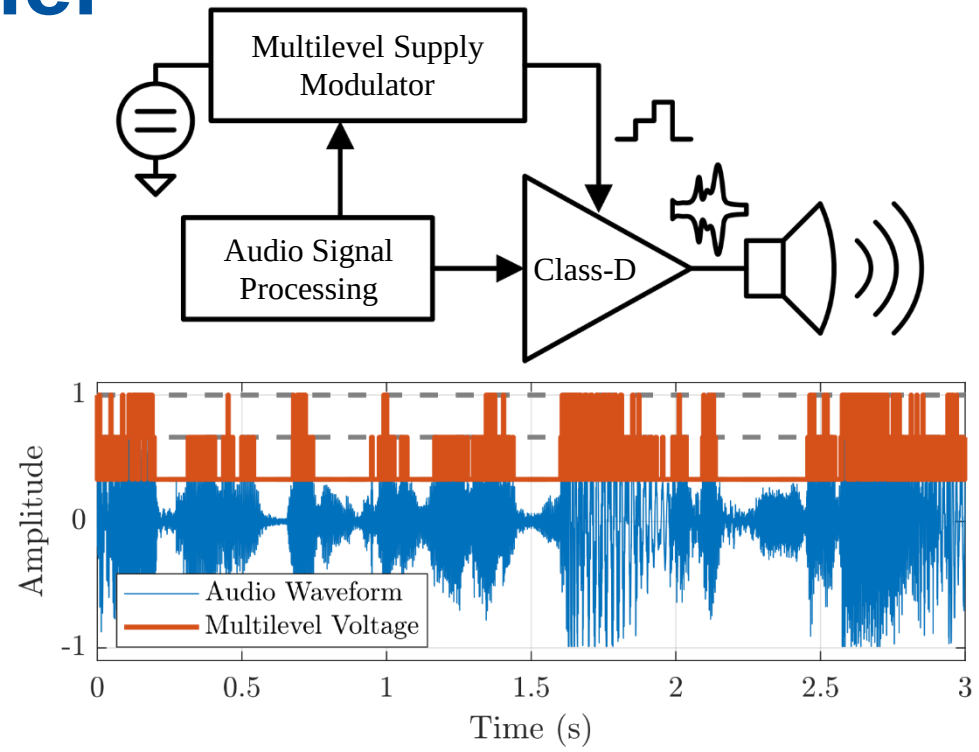
Bachelor or Master Thesis

Höchstfrequenz elektronik

RWTH AACHEN UNIVERSITY

Adapting Multilevel Supply Modulation to a Class-D Audio Amplifier



Background

Switch-mode class-D amplifiers have become the common choice in audio applications because of their comparatively high efficiency. However, the efficiency is only high when the output signal has a large amplitude. This is not the case for music signals which rather have a dynamic waveform that is at a low level for most of the time. The switching losses of a class-D amplifier are directly proportional to the voltage which it has to switch. Therefore, dynamically adapting the supply voltage of a class-D amplifier for audio applications is promising to enhance the power-efficiency of the amplifier.

Tasks

A Class-D audio amplifier including a multilevel supply modulator shall be designed and tested. The tasks can be adjusted to fit the Bachelor or Master thesis requirements and the students' wishes.

- Literature review on supply modulation and Class-D audio amplifiers
- System design and functionality testing using Matlab/Simulink
- Simulation and choice of parts using ADS and/or Spice
- Design of a PCB using Altium Designer or ADS
- Populating the PCB and testing it in the HFE laboratory
- Documentation of all results in the Bachelor or Master Thesis

Contact

Lukas Hüssen
Kopernikusstraße 16, 52074 Aachen
ICT cubes, 5th Floor, Room 539
+49 241 80 24644
lukas.huessen@hfe.rwth-aachen.de
www.hfe.rwth-aachen.de