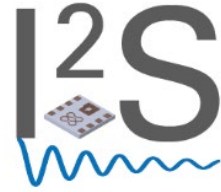


University of Stuttgart
Institute of Smart Sensors



Master thesis

Design and implementation of a BiCMOS power amplifier for NMR

Nuclear magnetic resonance (NMR) is one of the prime modalities for probing molecular structure in the biomedical context and analyzing bulk material properties. Over the past decade, NMR electronics have entered the focus of attention as a key component for the miniaturization of NMR devices. Here, the NMR-on-a-chip approach, in which all required electronics (e.g., the low-noise amplifier (LNA) and the power amplifier (PA)) are realized on a single integrated circuit, in which has been pioneered by our institute, has gained significant attention in the research community to realize portable and NMR sensors.

Your task will be the design and implementation of a BiCMOS power amplifier NMR-on-a-chip transceivers. Your work will include a comparison of different PA topologies, the selection, and optimization of the most promising topology by circuit simulations in Cadence Virtuoso, as well as the physical layout of the circuit.

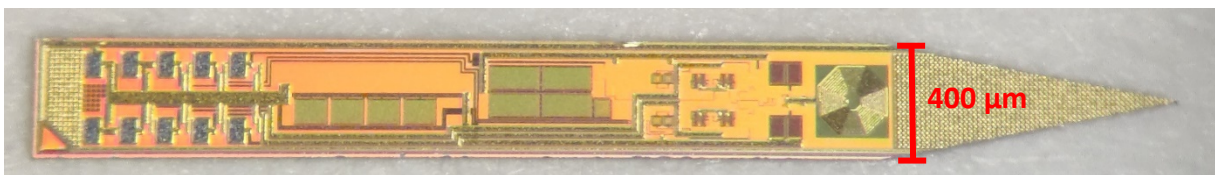
Requirements:

- ✓ Knowledge in circuit design (CMOS and BJT)
- ✓ Basic knowledge with Cadence Virtuoso
- ✓ Motivation to design a state-of-the-art circuit for an emerging application

Duration: 6 months

Language: English/German

Contact person: Frederik Dreyer, frederik.dreyer@iis.uni-stuttgart.de



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