

Master thesis

Design of a power amplifier in 130 nm SiGe BiCMOS for EPR spectroscopy

A radio frequency power amplifier (PA) is an electrical device, which utilizes the power from its DC power supply to produce an amplified version of its input signal. The main goal of a conventional power amplifier design is to provide maximum output power with high efficiency. However, in this project, we are aiming at designing an amplifier in 130 nm SiGe BiCMOS technology, which provides a maximum output current into an inductive load at GHz frequencies. This PA will be a key component of one of our portable EPR-on-a-chip systems (EPR = electron paramagnetic resonance).

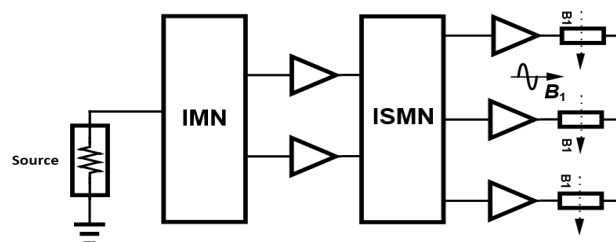
You will learn the basics of designing RF PAs in SiGe BiCMOS using Agilent's Advanced Design System (ADS), an industry-standard software design tool. You will compare different PA topologies using circuit simulations and select the most appropriate topology. You will then complete the design of this PA topology, including the physical layout and post-layout simulations.

Requirements:

- ✓ Basic understanding of microwave engineering, analog circuit design, RF circuit design, and communication systems
- ✓ Basic experience with the simulation of analog circuits

Duration: 6 months

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