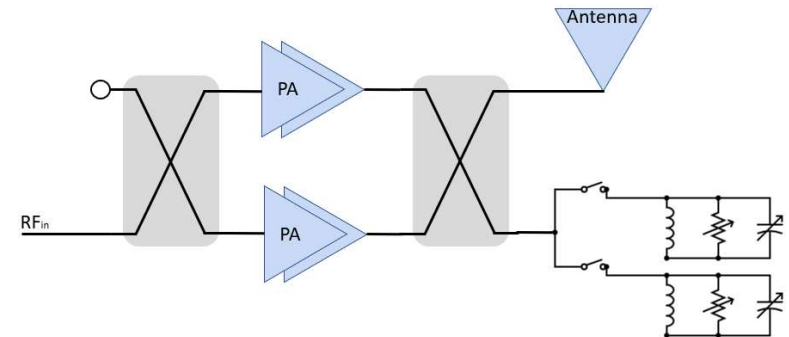
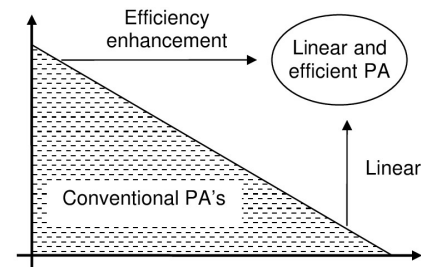


Impact of Antenna Impedance Mismatch on the Efficiency and Linearity of RF Power Amplifiers

This study investigates the effects of antenna impedance mismatches on the performance of balanced RF power amplifiers (PAs). Balanced amplifiers are known for their superior linearity and efficiency. However, when the antenna presents an impedance mismatch, these benefits are degraded, leading to reduced power-added efficiency (PAE) and impaired linearity. To address this challenge, the research integrates an active tuning system within the balanced PA architecture. The active tuning system continuously monitors the amplifier's operating conditions and dynamically adjusts the matching network to counteract the effects of impedance mismatches. The objective is to restore, and possibly enhance, the amplifier's performance despite varying load conditions.

Tasks:

- Design and simulation of the circuits in a 0.13- μm SiGe BiCMOS technology with RFIC design tools (Cadence, ADS)
- Develop models linking antenna impedance mismatch to efficiency and linearity.



Requirements:

- Good understanding of circuits (e.g. ES, RFE or RFIC)

Language: English

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