

Development of an MMIC Based mmWave Phase-Shifter for a Beamforming Transceiver

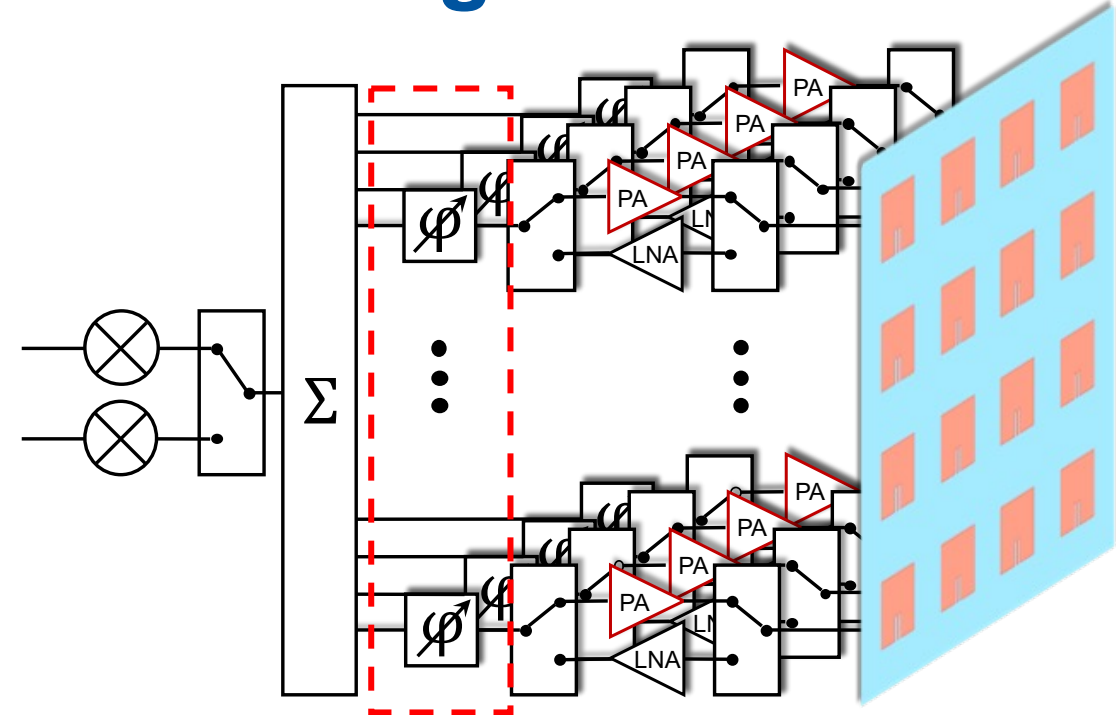
Background

5G mmWave systems use beamforming transceivers to overcome the challenges posed by the use of high-frequency signals in wireless communication. The beamforming technology focuses the signal energy in a specific direction, increasing the signal strength in that direction and reducing interference from other directions. **Phase shifters** are used in beamforming systems to adjust the relative phase of the signals transmitted by each antenna element in the array, allowing for the creation of a directional beam. Therefore, they are crucial elements in beamforming transceivers.

Tasks

The students' task is the development of an MMIC based mmWave phase shifter for a 5G beamforming transceiver. For this, the student needs to work through the following tasks:

- Familiarisation with Keysight ADS Design and Simulation Software
- Literature survey on suitable MMIC based phase shifters and control logic for GaAs HEMT switches
- Design of the phase shifter in state-of-the-art GaAs MMIC technology node



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