

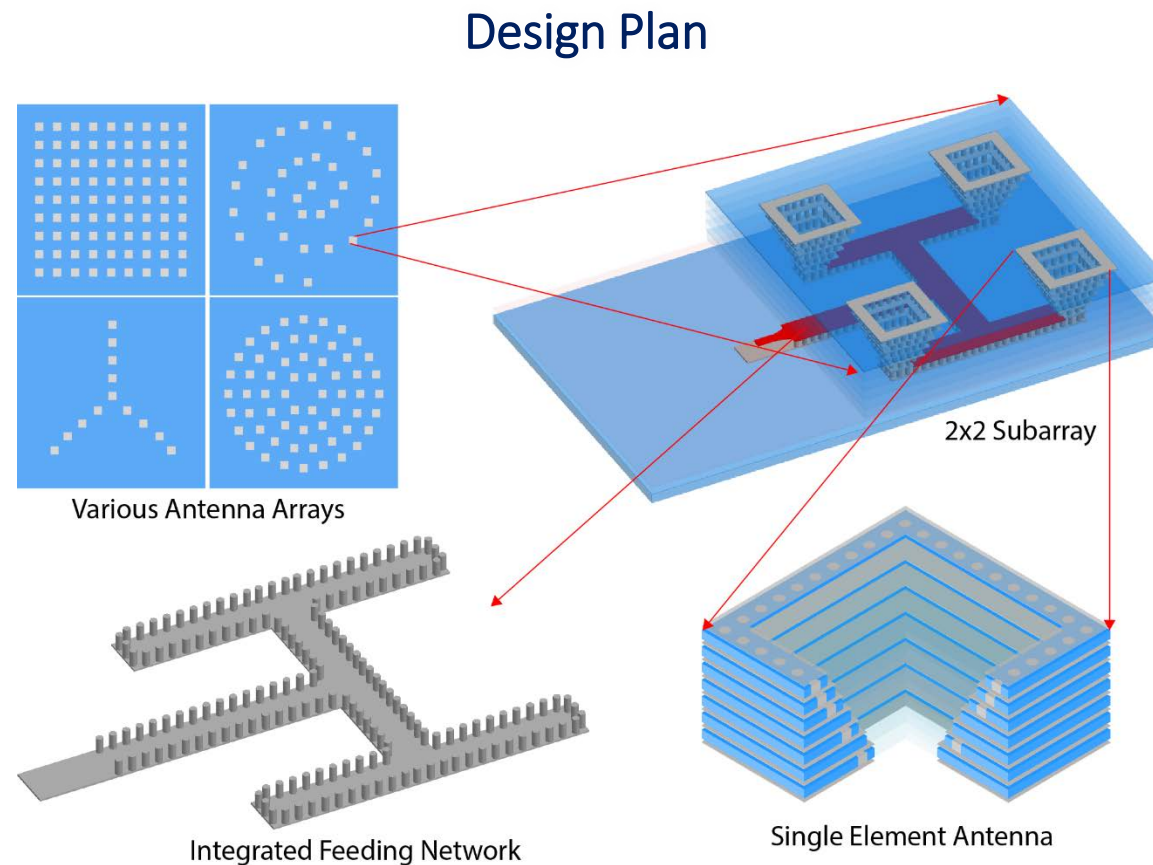
Millimeter Wave Integrated Antenna Arrays On LTCC

Goals and Objectives:

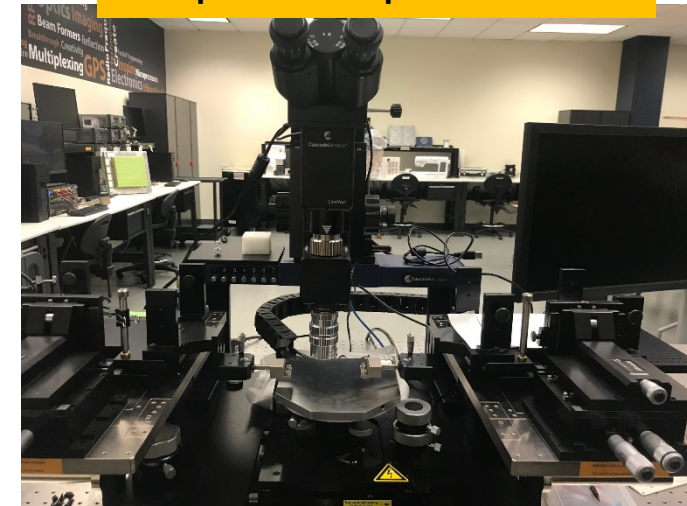
Design, in house LTCC fabrication and characterization of Fully Integrated On-Chip Interferometric Arrays operating at 94 GHz.

Features :

- Compact form factor
- Can be integrated in array format
- Can be packaged to form a System-On-Chip
- Improve resolution for Radar and Imaging systems
- Microstrip or GCPW feeding



mmWave Probe Station
Operational up to 115 GHz



Millimeter-Wave Camera

Operation:

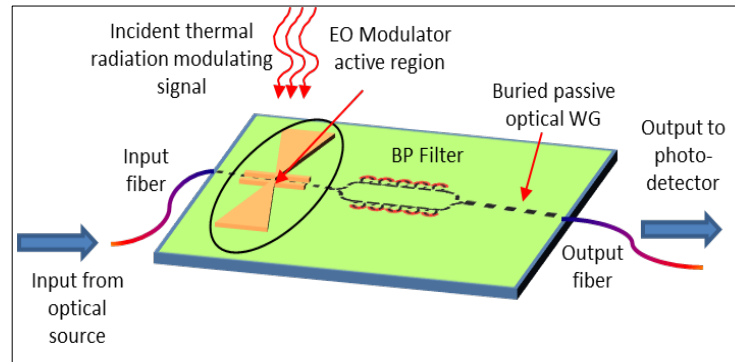
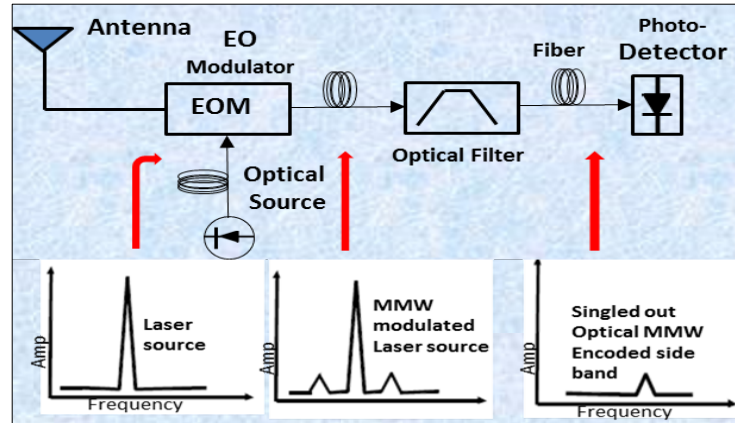
- Received RF/mm-wave signal is converted to optical via an integrated EO modulator
- Simple IR lens camera performs spatial Fourier Transform for image acquisition

Imager Consists of:

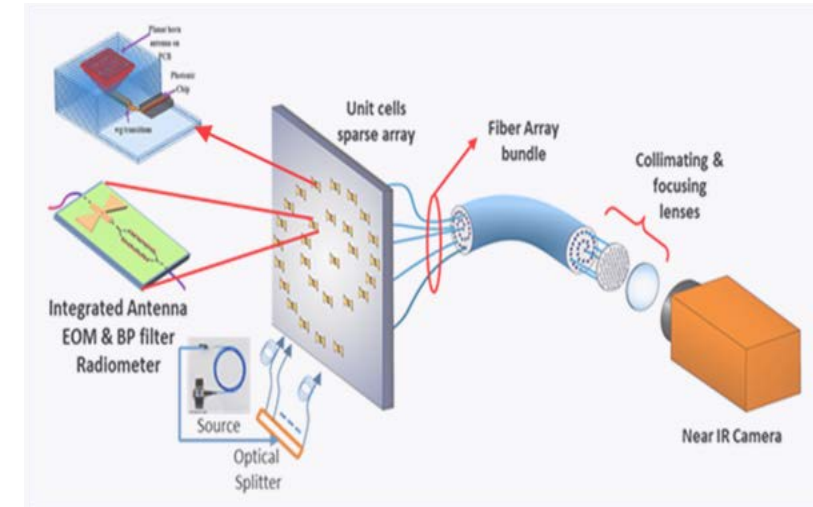
- Sparse Antenna Arrays
- EO modulator per array element
- Optical filters
- Photo detector array

Features:

- Passive imager operating at 94 GHz
- Integrated sparse interferometric array of unit pixels
- Antenna integrated 94GHz EO modulator
- Make use of off-the-shelf NIR camera



mm-Wave Camera System



Challenges :

- Efficiency of 94 GHz EO modulator design
- Optimum sparse array design algorithm
- Camera system integration