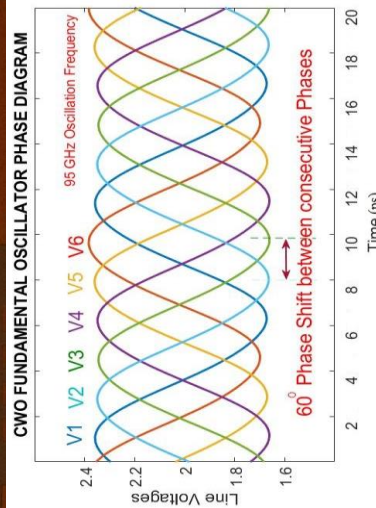
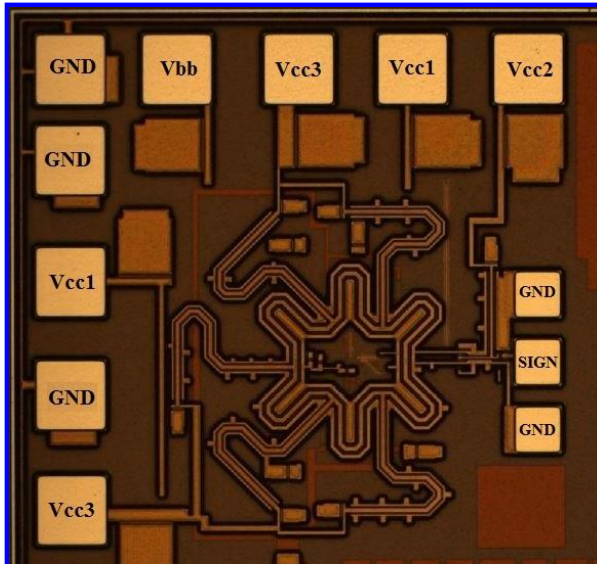


Goker Ariyak

*Department: Electrical & Computer
Engineering*

*Title: "SiGe Constructive Wave Oscillator
Based Terahertz Frequency Multipliers"*

Major Professor: Dr. Numan S. Dogan



RESEARCH QUESTIONS / PROBLEMS:

- Finding a new approach to generating THz level signal (300 GHz-400 GHz) by using frequency multiplier (Tripler case)

METHODS:

- Six-section and eight-section Constructive Wave Oscillators at W-band range were used to generate frequency tripler and quadrupler at THz frequency range (0.4 THz)

RESULTS / FINDINGS:

- Tripler design was implemented in a BiCMOS8HP process and chip output was measured successfully. First-time proof of 60° phase shift through single stage CWO has been demonstrated.

SIGNIFICANCE / IMPLICATIONS:

- A first time CWO based N-push frequency multiplication has been implemented on a chip level. THz frequency level is important for non-destructive imaging (concealed weapon detection, defense and medical apps) and W-band freq. range is used in cloud penetrating radar, automotive communication