Circuit Simulation Project

https://esim.fossee.in/circuit-simulation-project

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Title of the circuit: Design and Simulation of Low Power Pierce Crystal Oscillator Using CMOS Technology**.**

Objective:

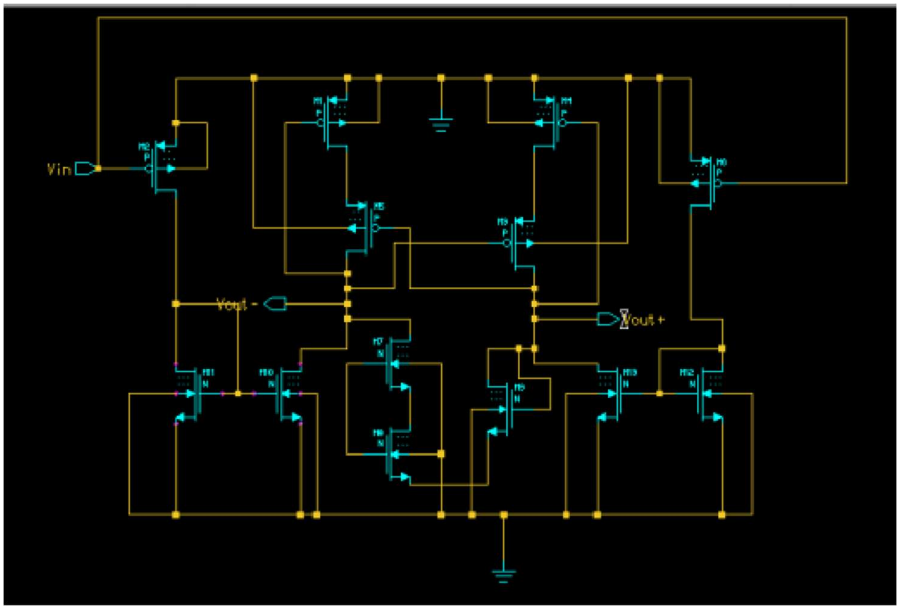
The primary objective of the project is to implement the Pierce Crystal Oscillator circuit utilizing eSIM software and to analyse its input and output transient characteristics.

Theory/Description:

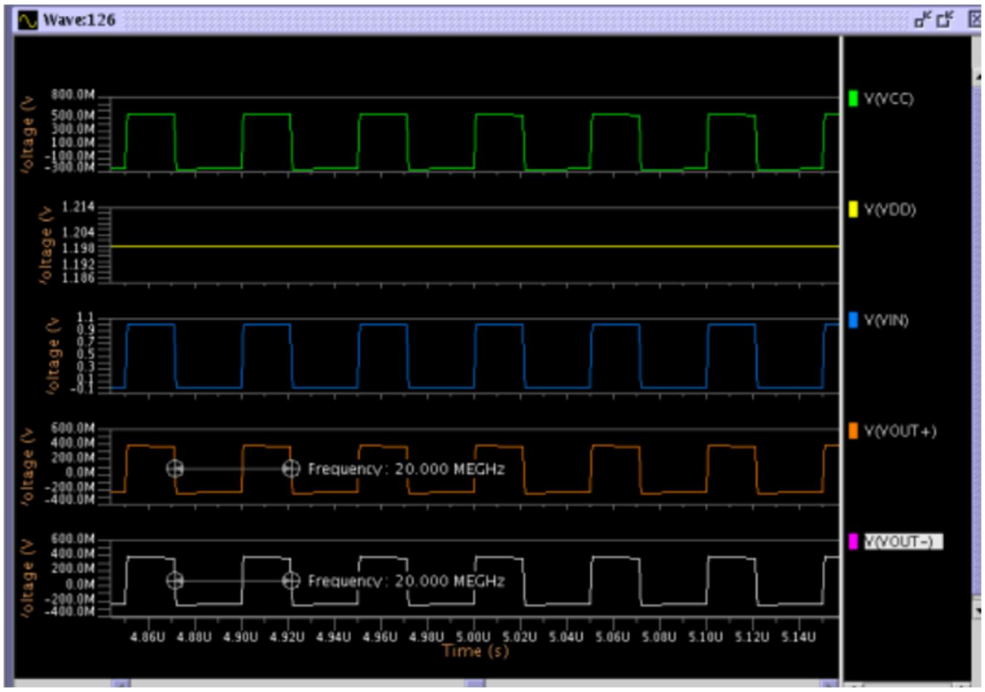
Oscillators produce AC signals, such as sine waves, based on materials such as quartz, which has piezoelectric characteristics—generating electrical potential from mechanical motion. Crystal oscillators are very stable, having constant frequency regardless of temperature or voltage variations, making them well-suited for low-power, accurate applications such as portable equipment.

Pierce crystal oscillator is one of the important types of feedback amplifier, characterized by low power consumption and application in wireless systems for synchronization. Oscillator design entails trade-offs between the parameters of power, frequency, and phase noise.

Circuit Diagram(s):



Results (Input, Output waveforms and/or Multimeter readings):



Source/Reference(s):

- **Title of the paper:** Design of Low Power Pierce Crystal Oscillator Using CMOS Technology
- **Name of the Journal/Publication:** International Journal of Computer Science and Engineering
- **Author(s):** P.L. Suryawanshi, V.R. Pawar
- **Chapter Volume Pages:** Vol.6, Issue.6, pp.421-423, 2018
- **Link:** https://mail.ijcseonline.org/pdf_paper_view.php?paper_id=2198&65-IJCSE-03940.pdf