TITLE OF THE EXPERIMENT:

DE-AMPLIFICATION AND NEGATIVE CLIPPING USING SZIKLAI TRANSISTOR PAIRS

THEORY:

The Sziklai Transistor Pair is used in order to overcome the demerits of the Darlington transistor pair. The main idea of Sziklai Transistor pair is the construction of both NPN and PNP configuration of transistors using a PNP(Q2N2907A) and NPN (Q2N2222) transistors.The De-amplication of the signal occurs in the NPN transistor pairs as the NPN configuration is used for discharging purpose it reduces the signal strength.The PNP transistor configuration acts as a Diode connected in series with the De-amplification circuit. As a result of which the output of the NPN transistor pairs are clipped along the Negative Peaks and the Positive Peaks of the De-amplified signal are passed as output. Moreover from the output graphs it is evident that the De-amplification of the input signal occurs in a way such that the output signal is distortionless. This circuit provides the operation of HALF-WAVE RACTIFIER without the usage of Transformer.

SCHEMATIC DIAGRAM:

The circuit schematic of the above mentioned circuit in eSim is shown below:

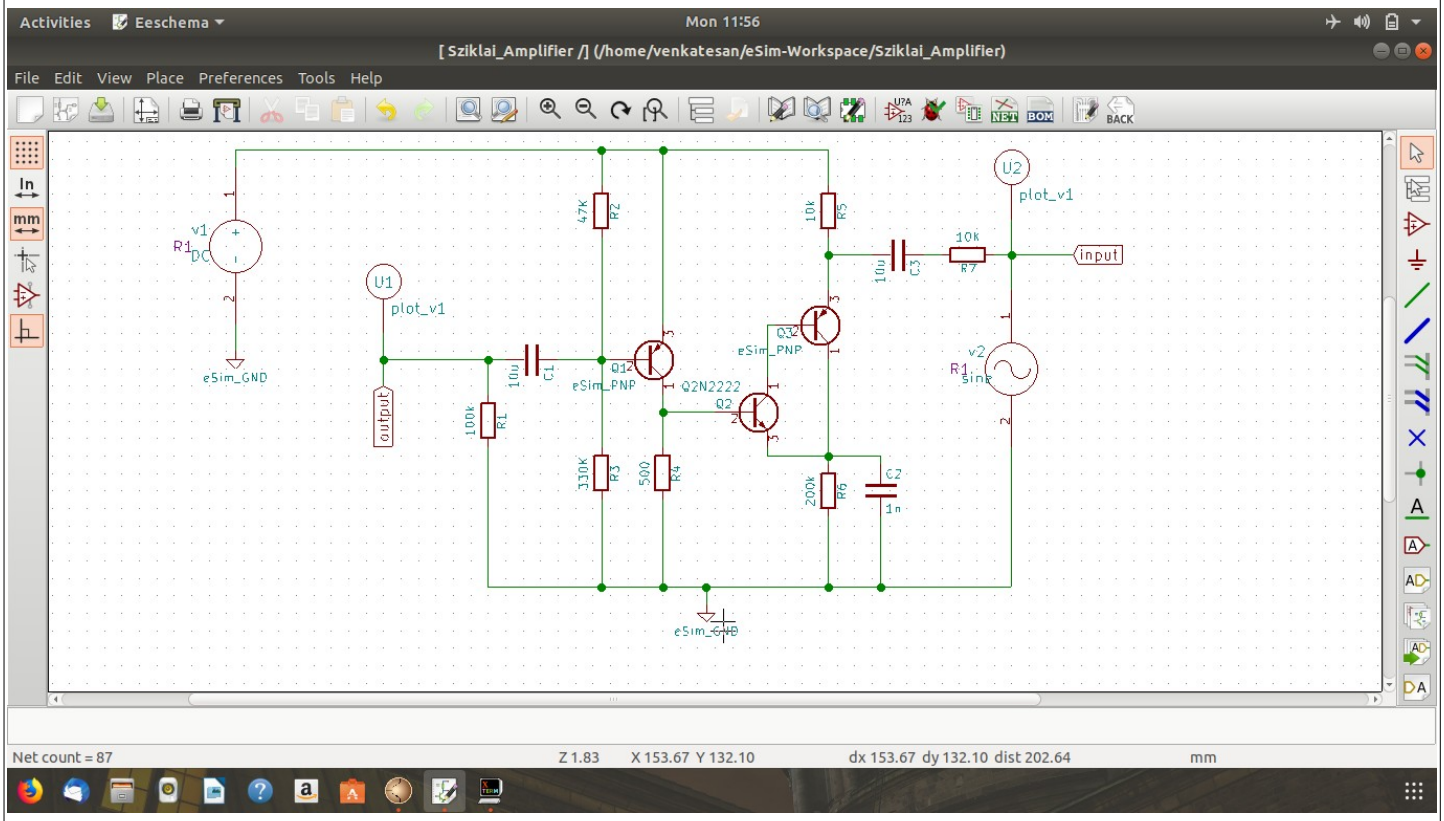

FIGURE 1: DE-AMPLIFICATION & NEGATIVE CLIPPING WITH SZIKLAI TRANSISTOR

SIMULATION RESULTS:

1. NGSPICE PLOTS:

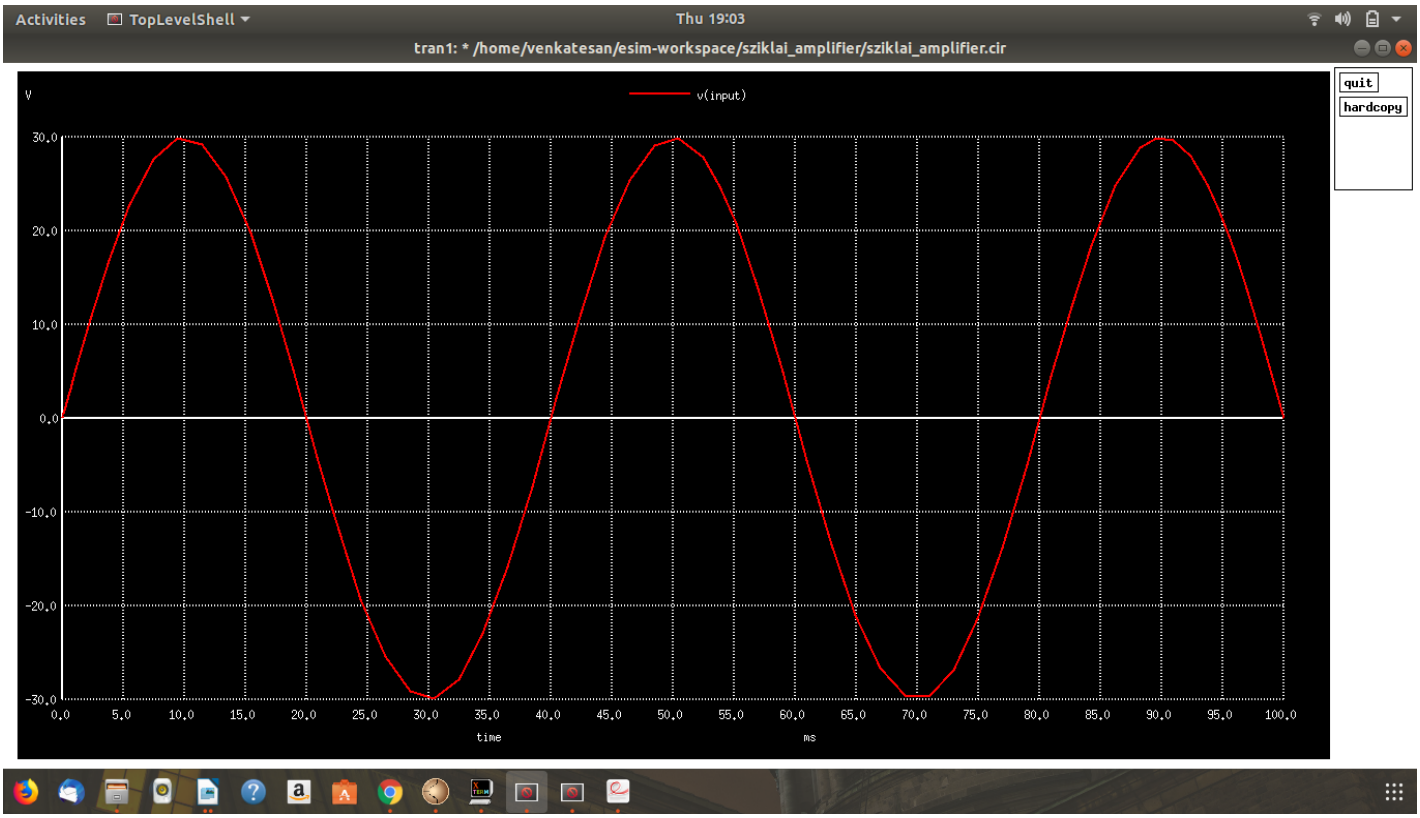

FIGURE 2: NGSPICE INPUT PLOT

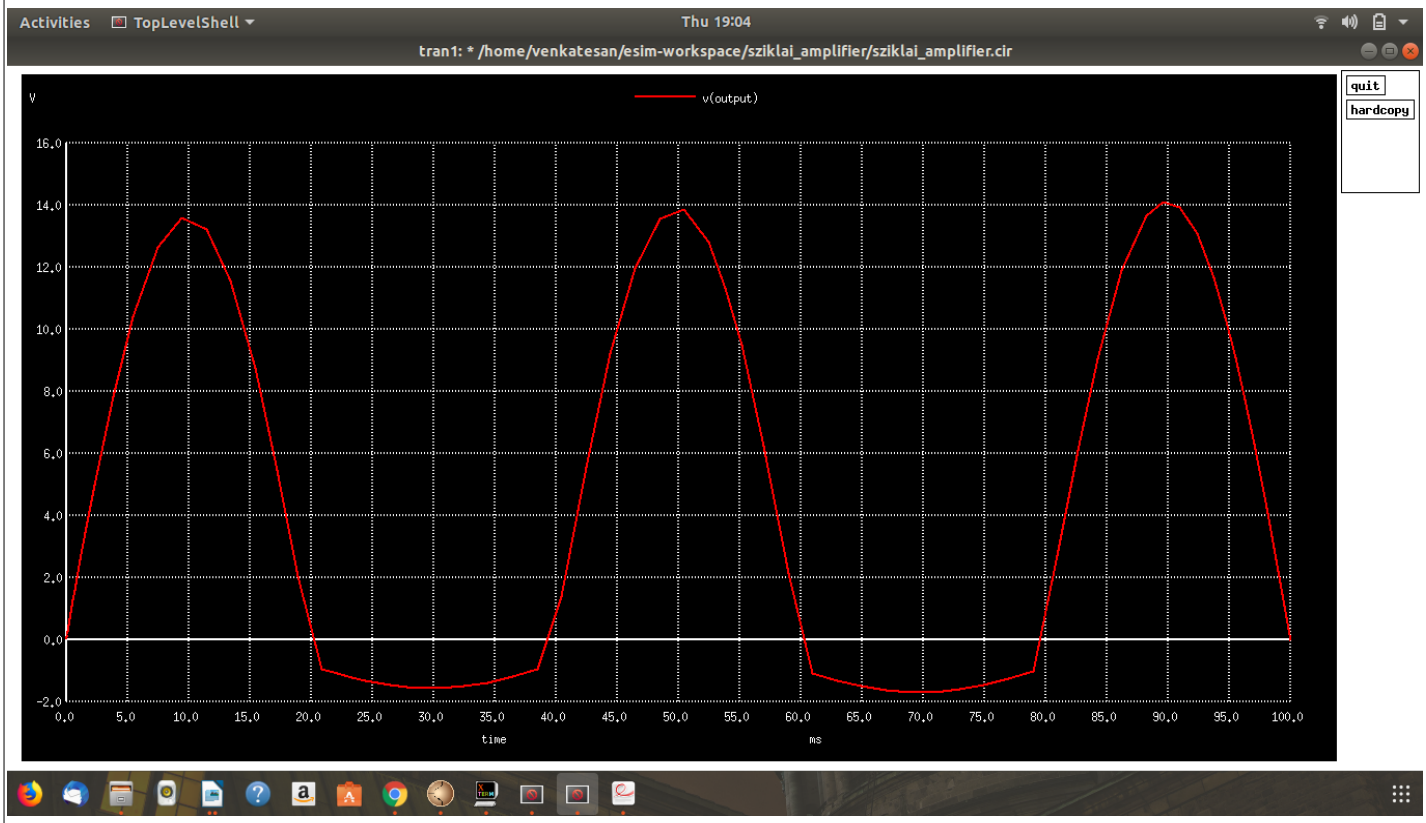

FIGURE 3: NGSPICE OUTPUT PLOT

2. PYTHON PLOT:

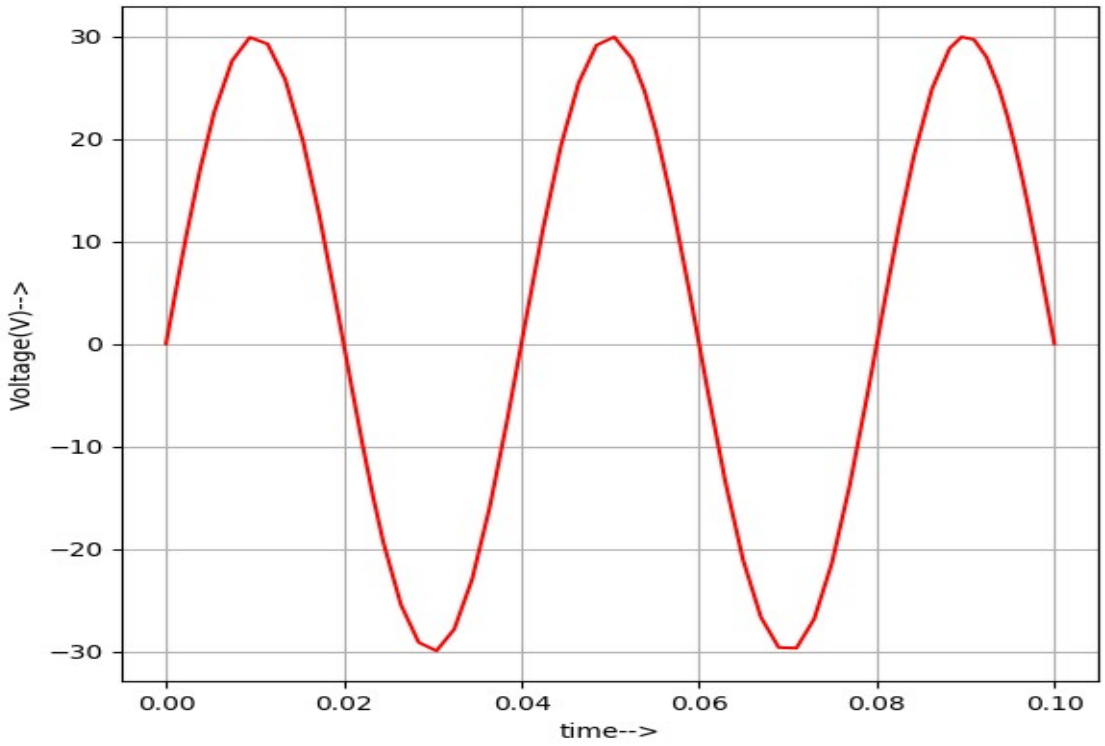

FIGURE 4: PYTHON INPUT PLOT

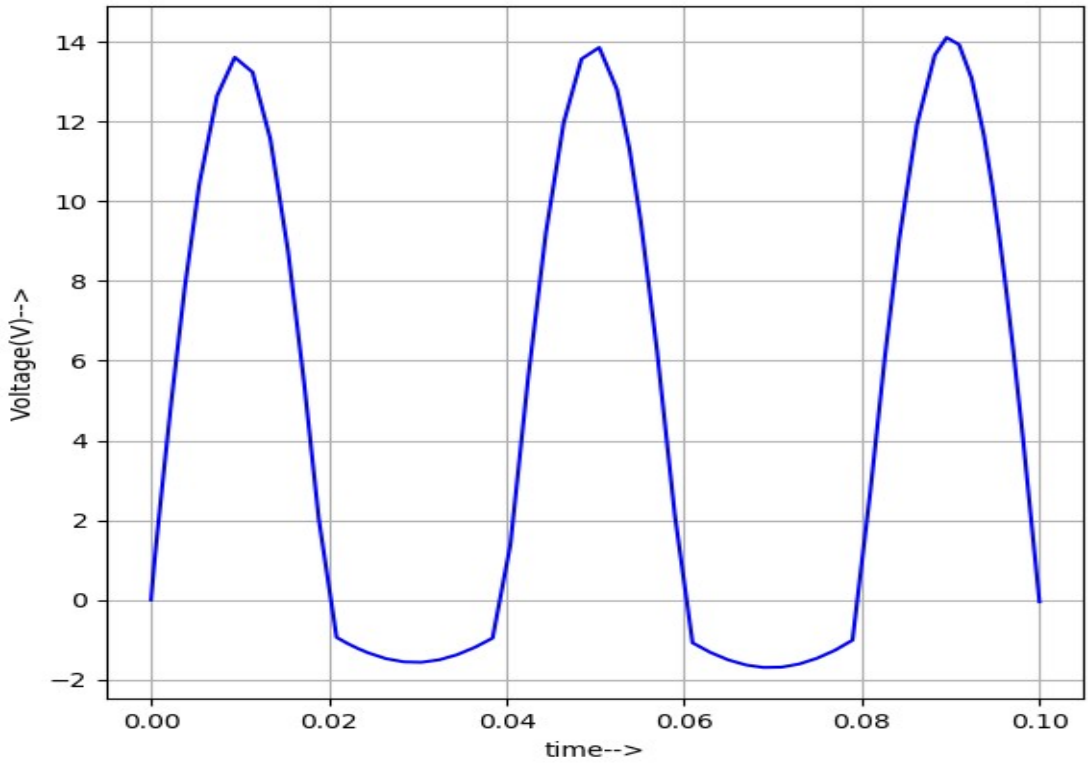

FIGURE 5: PYTHON OUTPUT PLOT

REFERENCES:

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2.https://www.google.com/searchq=darlington+pair+transistors+drawbacks&oq=darlington+pair+transistors+drawbacks&aqs=chrome..69i57.26973j1j8&sourceid=chrome&ie=UTF-8
3. https://circuitdigest.com/electronic-circuits/sziklai-transistor-pair