Circuit Simulation Project

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

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Title of the circuit : Implementing Pulse Position Modulator using IC 555 Timer with eSim.

Theory/Description :

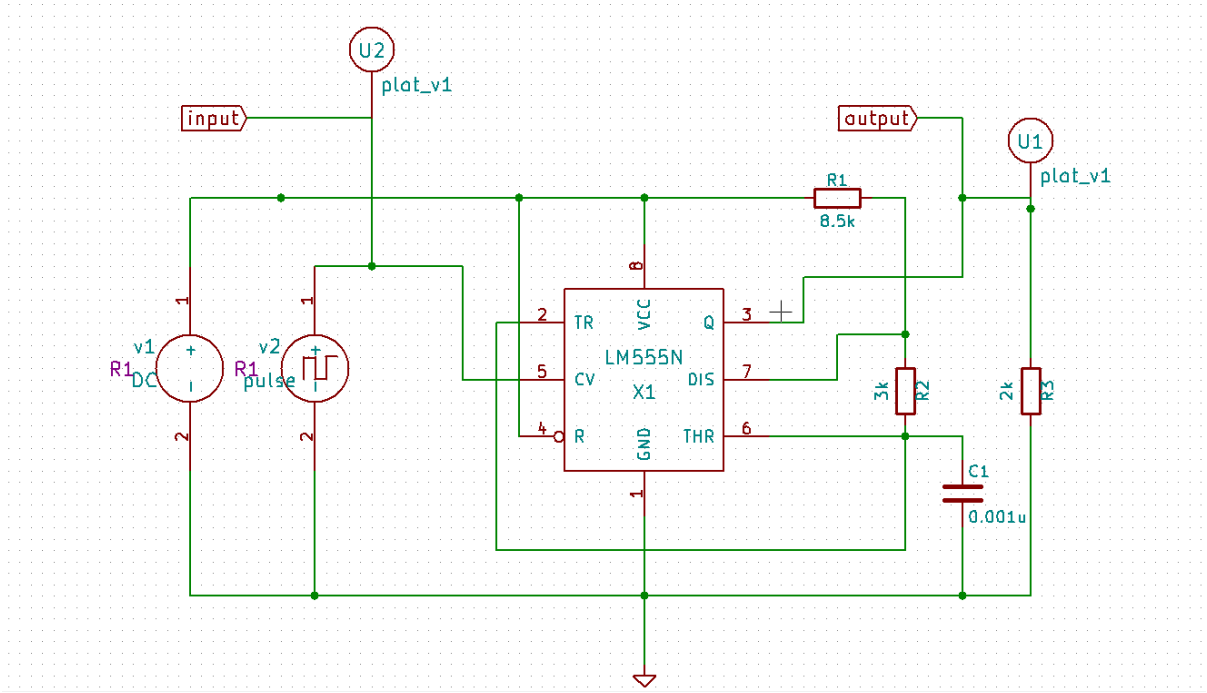
Pulse Position Modulation is a type of Modulation where the position of each pulse with reference to a particular pulse. Here a single pulse is transmitted with the requires number of phase shifts. So we can say that pulse position modulation is an analogue modulation scheme where the position of a reference pulse is aried according to the instantaneous value of message signal. PPM can also be obtained from PWM by connecting the PWM signal to a monostable mulltivibrator.

This application uses the timer connected for astable operation. A modulating input signa, a Triangular pulse l is applied to the control voltage terminal (Pin No.5). Now the pulse position varies with the modulating signal. Since the threshold voltage and hence the time delay is varied. In this type of modulation, the o/p frequency is varying leading to Pulse Position Modulation.

Components and Parameters :

Component	Quantity	Parameters
IC 555 Timer	1	-
Triangular Pulse	1	(0 5 0 0.00001 0.00001 0.0000001 0.00002) sec
DC voltage source	1	9 V

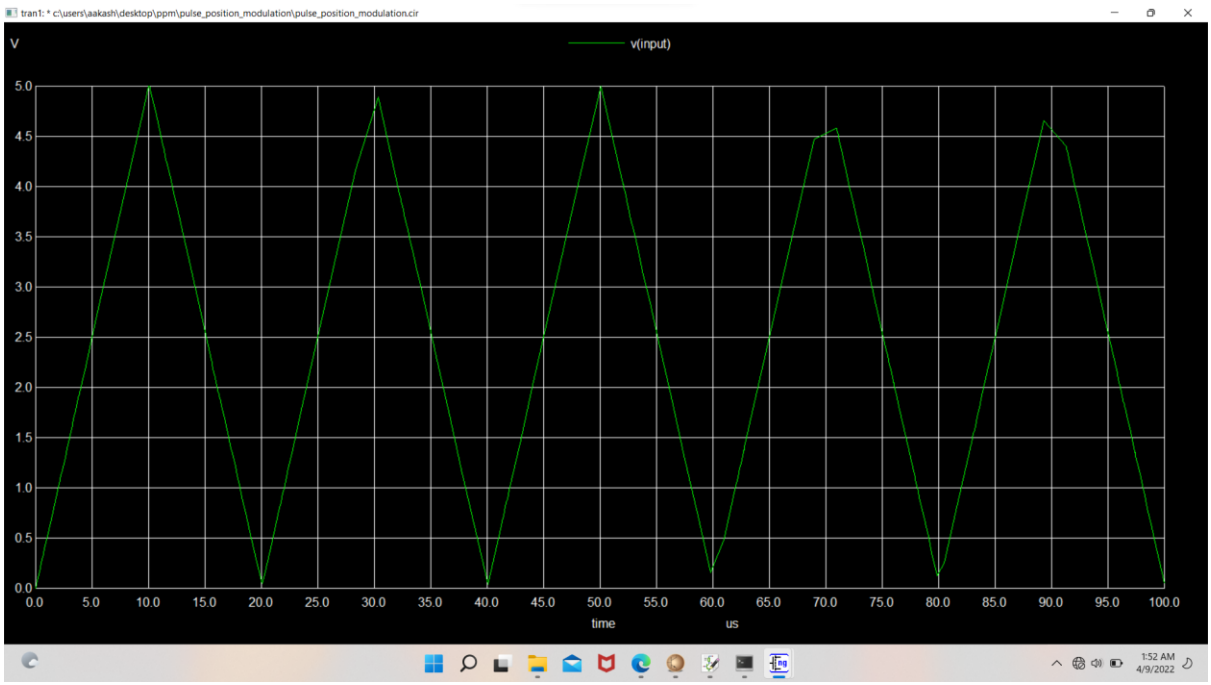
Circuit Diagram(s) :



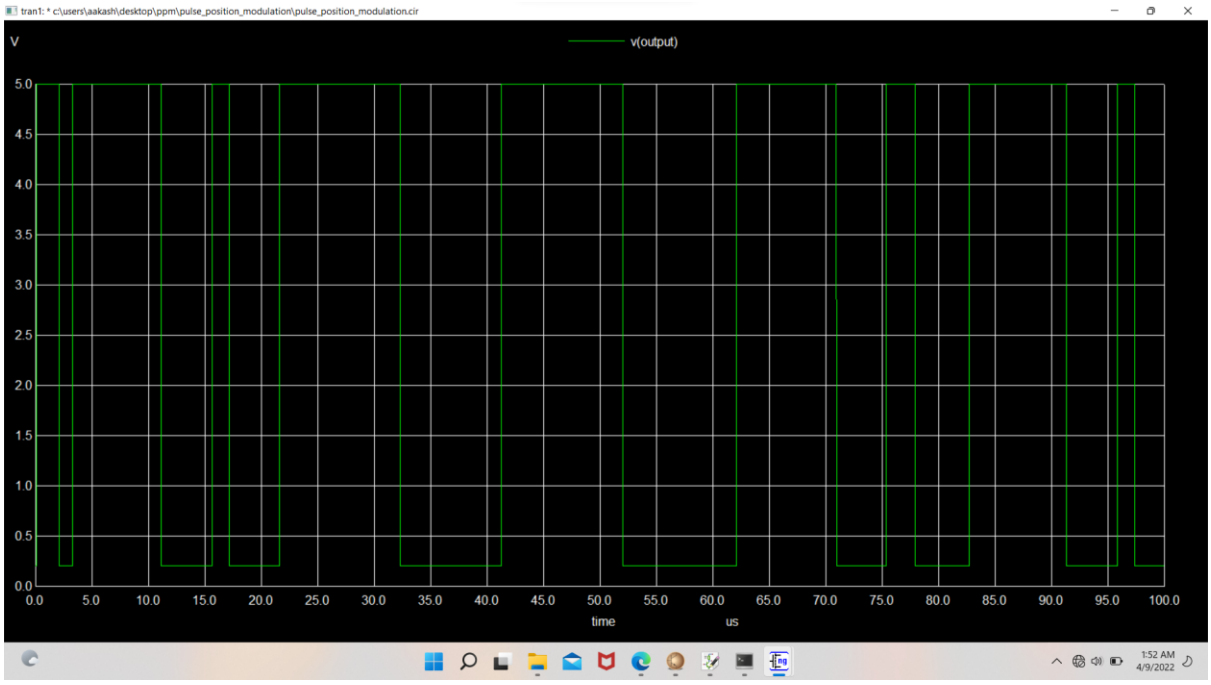
Results (Input, Output waveforms and/or Multimeter readings)

NgSpice Plots:

1)Input Waveform

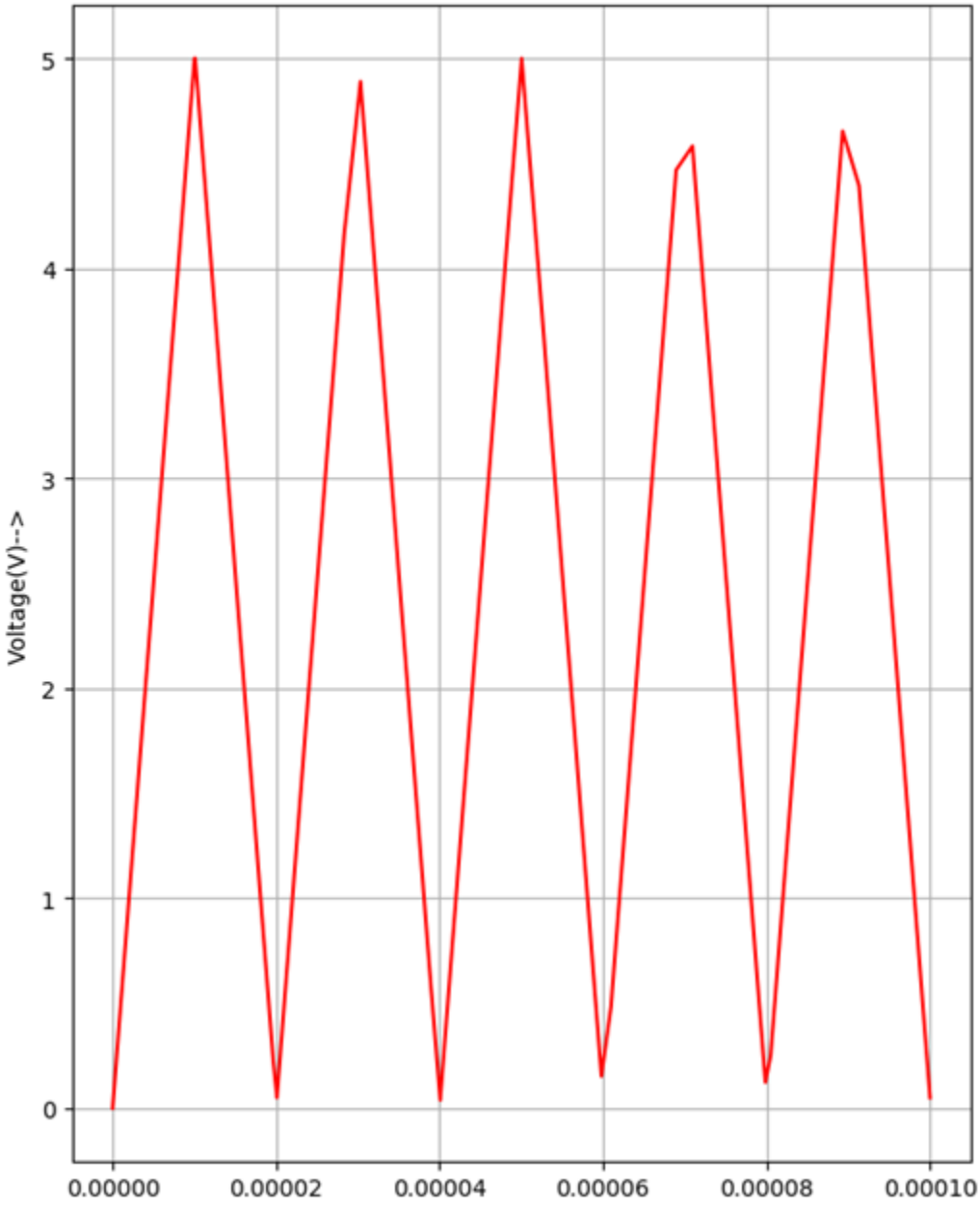


2)Output Waveform

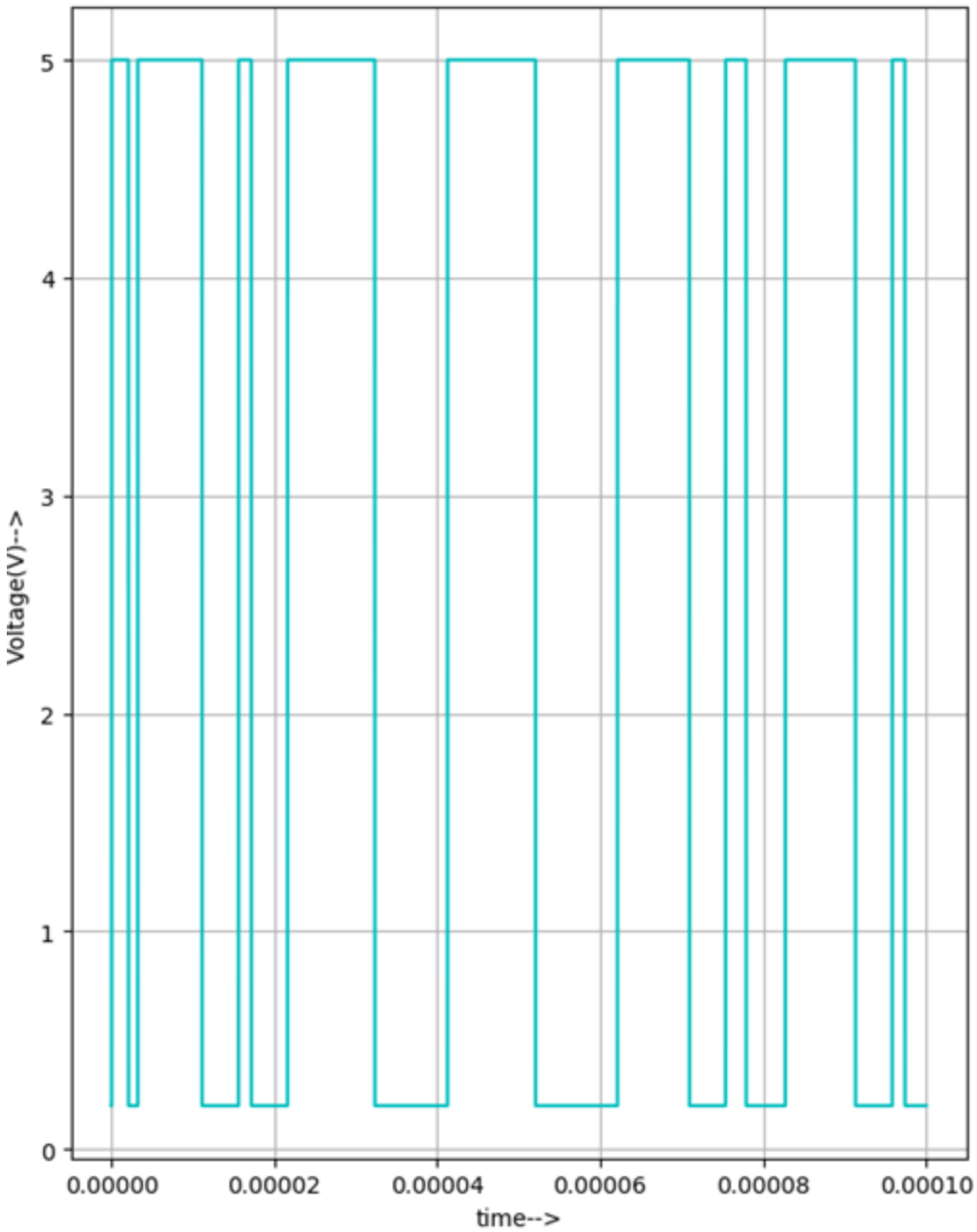


Python Plots:

1) Input Waveform



2)Output Waveform



Source/Reference(s) :

https://ieeexplore.ieee.org/document/5137073