**California State University, Northridge**

**College of Engineering & Computer Science**

**Electrical and Computer Engineering Department**

**ECE 443L Digital Electronics Laboratory Report 5**

**CMOS based Monostable Multivibrators Circuit Design**

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**Abstract:**

**The flip flop has two stable states and is called a bistable multivibrator. The monostable multivibrator has one stable state in which it can remain indefinitely. The monostable multivibrator can be used as a pulse stretcher or a pulse standardizer. It is also referred to as a one shot.**

**Diagram

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**The CMOS monostable multivibrator is composed of two-input CMOS NOR gates, a capacitor, and a resistor. The input source Vi supplies the positive trigger pulses.**

**A picture containing text, clock, watch

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**Author 1 Case 1 & 3:**

**Pspice & Experimental Assignment for Lab # 5 - CMOS based Monostable Multivibrators Circuit Design, Simulation and Experimental Test as well as Analysis.**

Diagram, schematic

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Case 1 Tau stretching by 4x using 20pf capacitor and 250k ohm resistor

Chart

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Table

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Simulation results of case 1 showing stretching and pulse of tau and 4tau

Diagram, schematic

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Case 3 Tau stretching by 9x using a 21pf capacitor and 570k resistor

A picture containing timeline

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Table

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Simulation result of above circuit

Diagram, schematic

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Figure 5.1 Monostable with 2 NOR gates @ 25ms period, 1ms pulse width & T=6\*tau

A picture containing text, device

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Table

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Figure 5.2 Monostable vibrator with 2 NOR Gates @ T= 6\*tau waveforms

Diagram, schematic

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Figure 5.4 Monostable Multivibrator with 2 NOR gates @ 25ms Period, .5ms Pulse width & T= 12\*tau

A picture containing text, device

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Monostable Multivibrator with 2 NOR gates @ T=12\*tau waveforms.

**Author 1 alternate case 1 and 3:**

Diagram, schematic

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5.1 CMOS Monostable Multivibrator Circuit

Chart

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Graphical user interface, application, table

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5.2 CMOS Monostable Multivibrator Simulation Result Tau = 4.

Diagram, schematic

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5.3 CMOS Monostable Multivibrator Circuit

A picture containing chart

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Table

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5.3 CMOS Monostable Multivibrator Simulation Result Tau = 10.

**Conclusion:**

In this lab we demonstrated the use and effect of the monostable vibrator. It is widely used in the modern world for temperature sensitive alarms or climate control in a car or home.