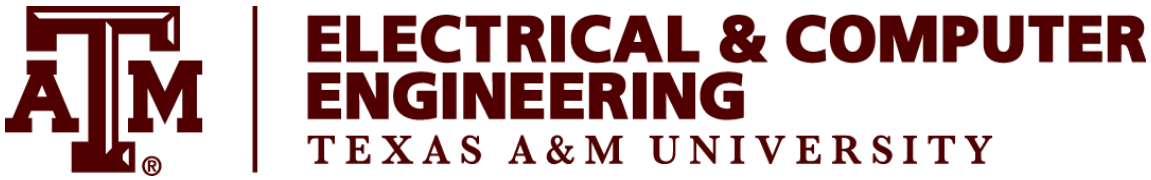
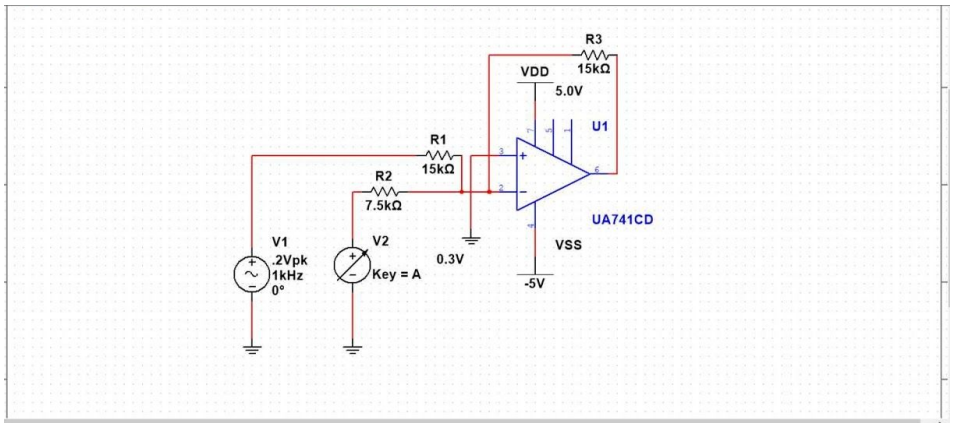


Post-Lab 4: Operational Amplifiers
Part 2

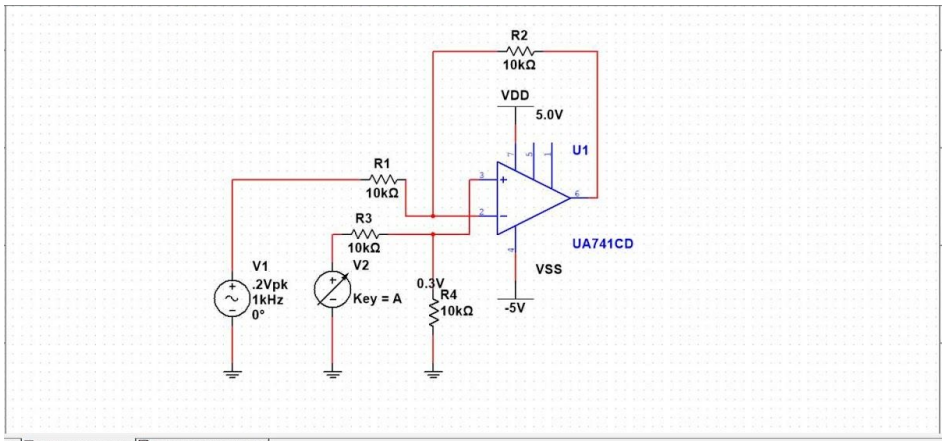
Kylan Lewis
UIN: 719001131
ECEN 325 -501
TA: Jian Shao
Date: 9/16/2020

Schematics:

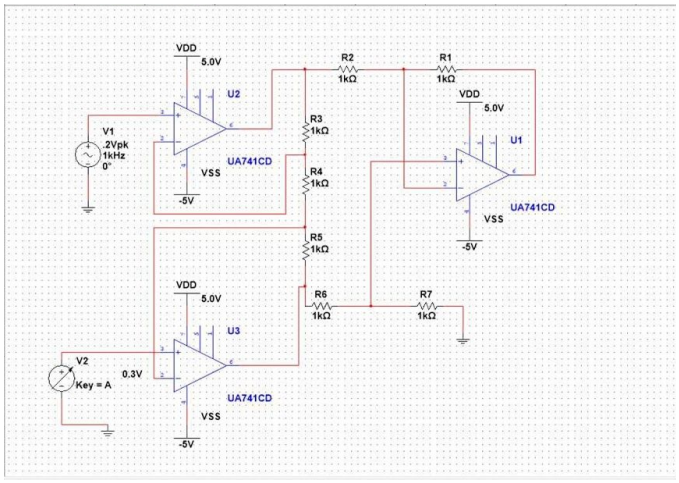
Summing Amplifier Schematic



Differential Amplifier Schematic



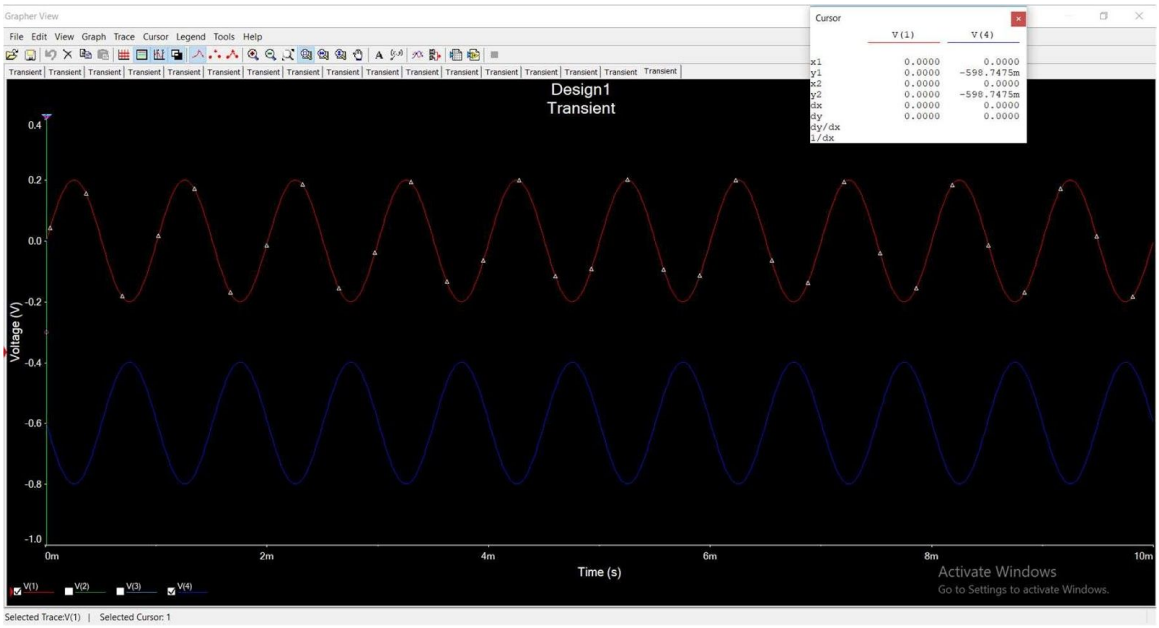
Instrumentation Amplifier Schematic



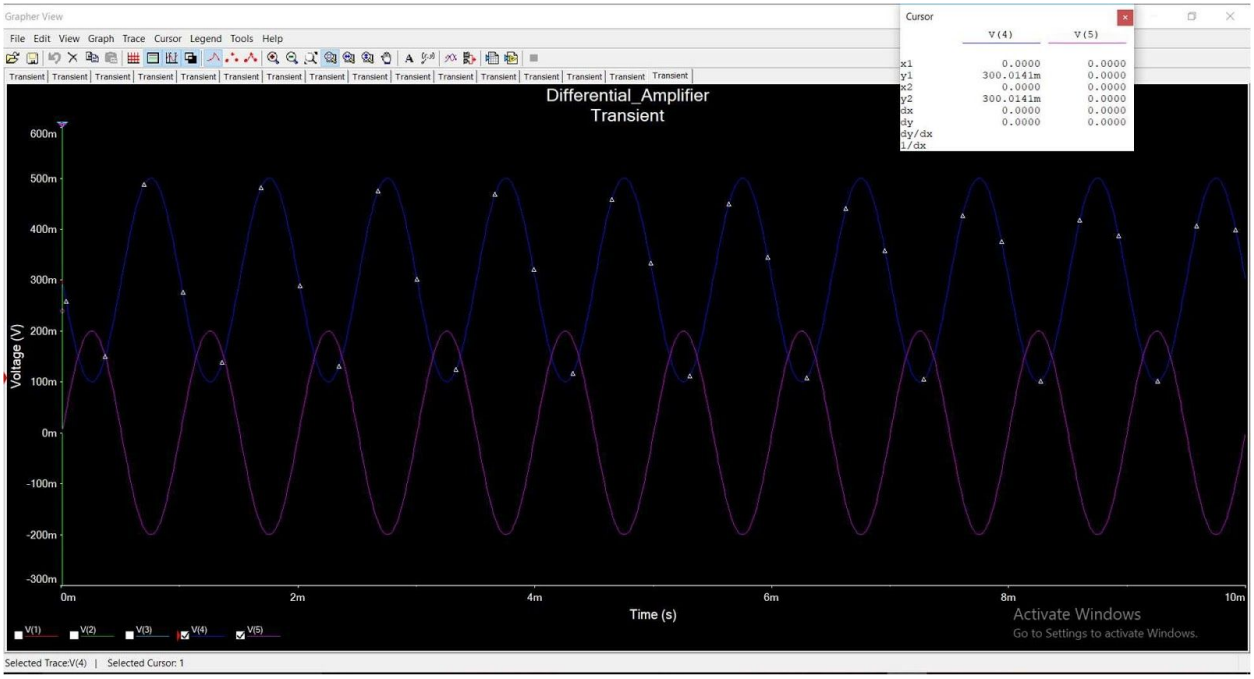
Simulations:

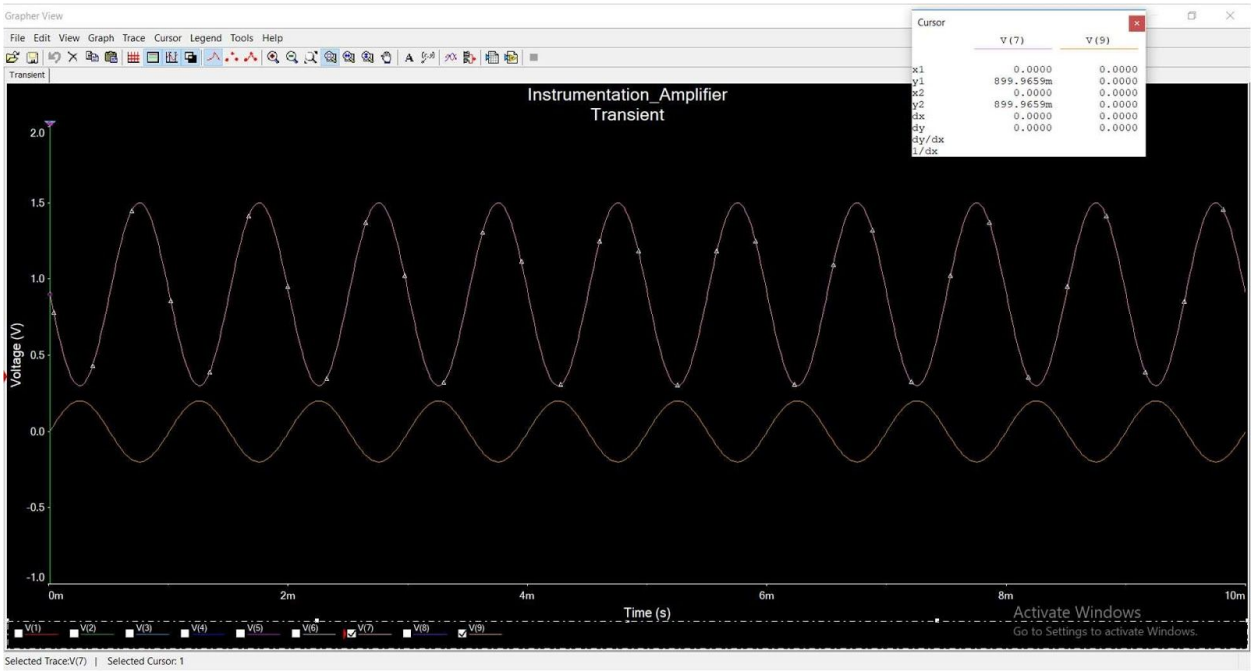
1.) Apply the inputs Vi1 = 0.2 sin(2π1000t) and Vi2 = 0.3V, and obtain the time-domain waveforms

Summing Amplifier



Differential Amplifier





TA Question:

(between 7:00 and 17:00) is,

<u>Ideally for the differential amplifier, if the two inputs are the same, the output should be zero. However, in the video, the output still shows a peak-peak value of 3mV. Why do you think this may happen?</u>

This is phenomenon is known as the Common Mode Output Voltage and is usually less than the input voltage. Basically the 3mV is the unwanted voltage (noise) in the system that is common to both the input terminals. This occurs because our models are ideal and we are not predicting any other factors. Things that can cause this noise include; offset signal in the driver circuit, ground differentials, and radiated signals.