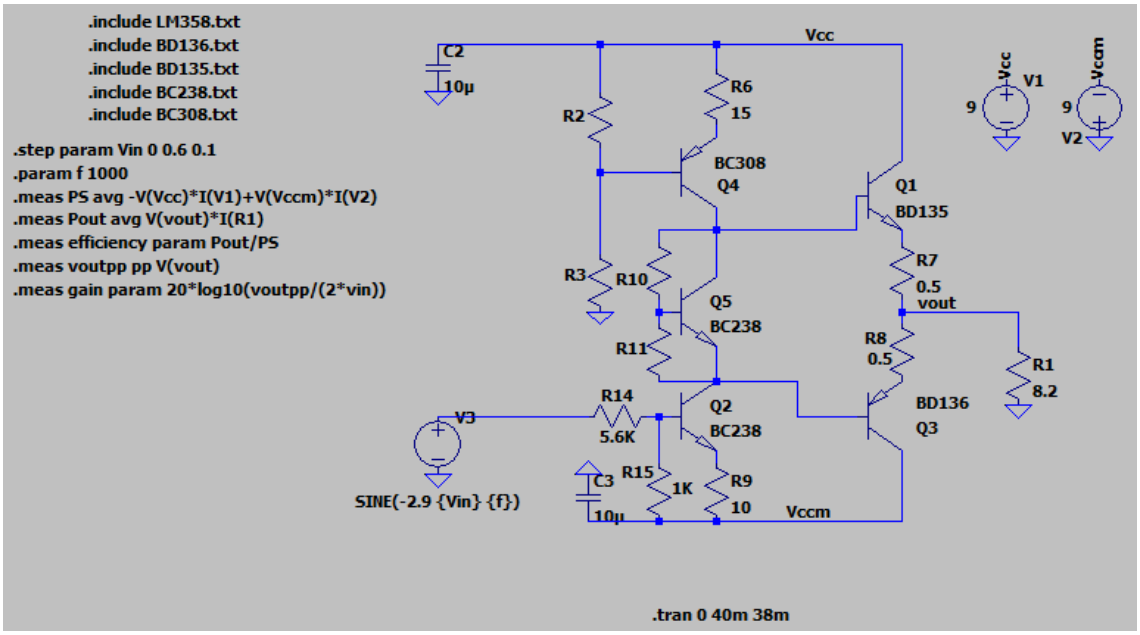
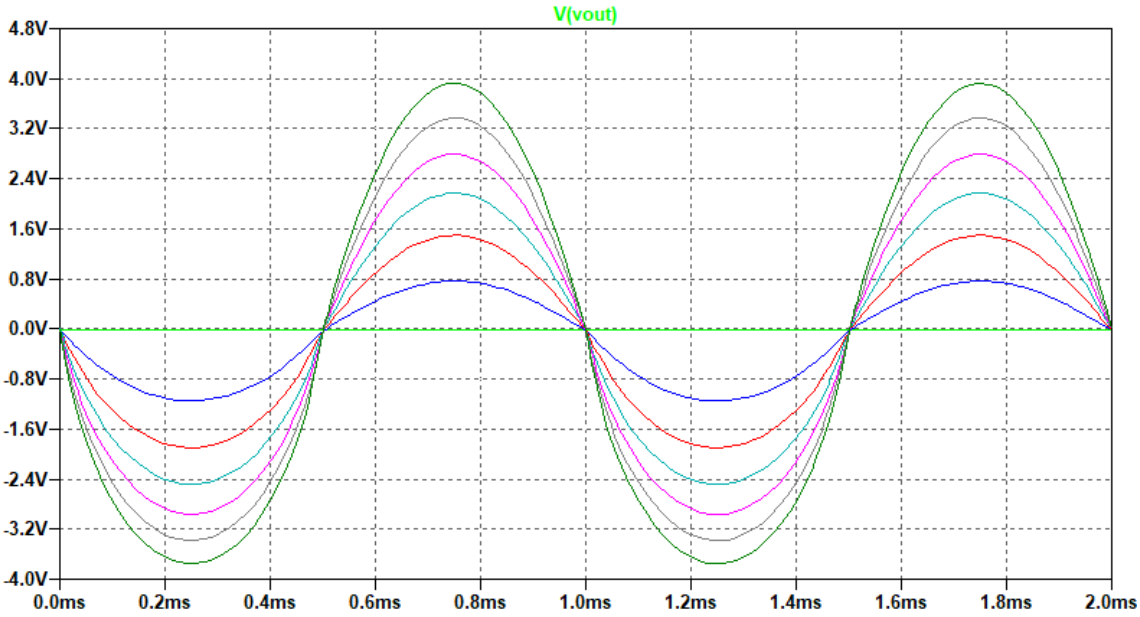
EE313 Laboratory #3

Push-pull Class-B Power Amplifier Problem Solving

If you have a stability problem, remove the feedback loop and the OPAMP, as shown below. The DC offset voltage of the input voltage should be carefully adjusted (by trial and error) to keep the quiescent output voltage at zero (-2.9V in the example below). The input voltage source is now substituting the output of the OPAMP, and YOU are the feedback. Note that the DC offset voltage should be approximately between −5 and +4; otherwise, the OPAMP cannot do its job.

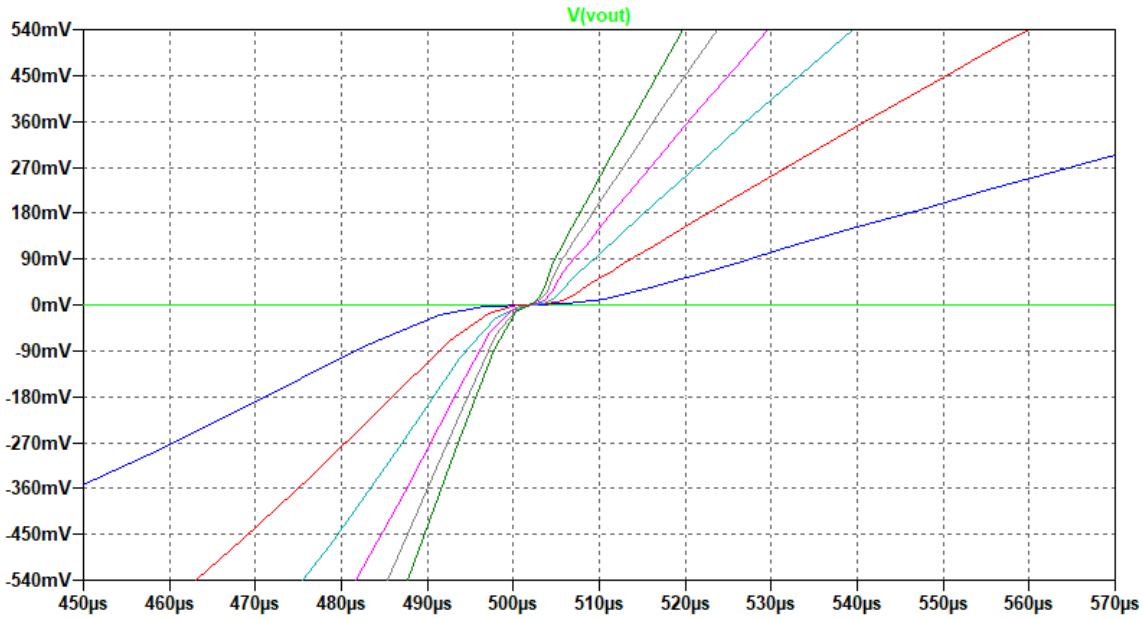


The output voltage should be like below:

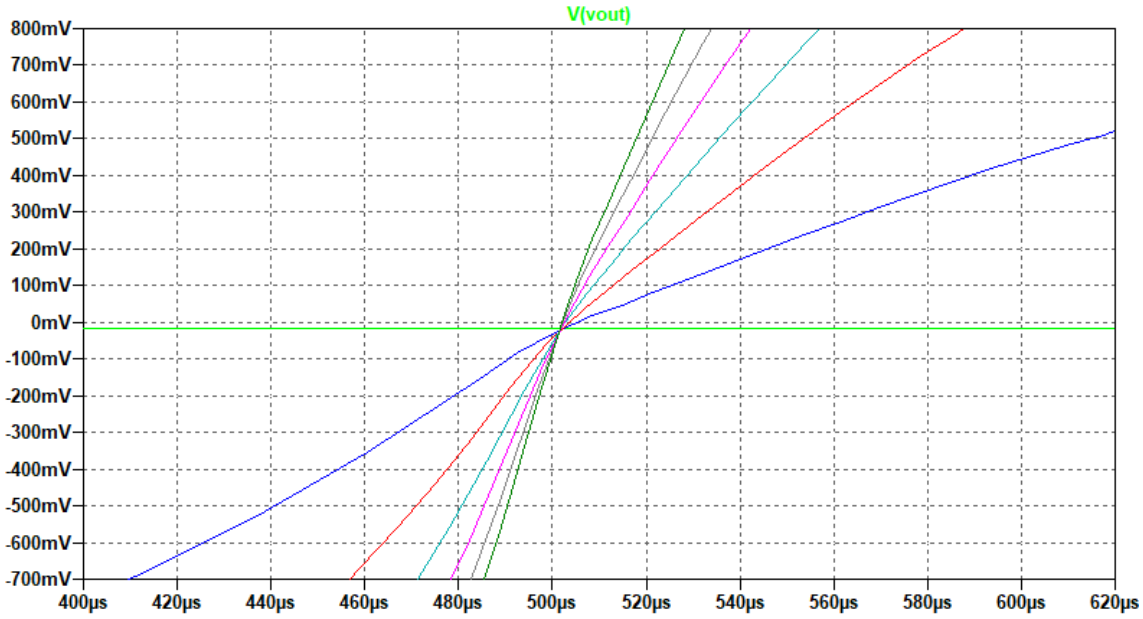


Note that without the feedback, there is some distortion in the output sinusoid. With feedback, this distortion will be gone.

If R10 is too low, you will get crossover distortion in the zero crossing of the output voltage as shown below:



With the proper value of R10, the voltage transition at the output voltage should be like below:



Once the circuit is working as above, connect the feedback loop and the OPAMP. The DC output voltage of the OPAMP (under quiescent condition) should be the same offset voltage you found by trial and error.

You may add a capacitor C1 in parallel with R4 if there is a stability problem as in the Lab sheet v2.

There is a method to find the value of C1, which we will study later in the course.