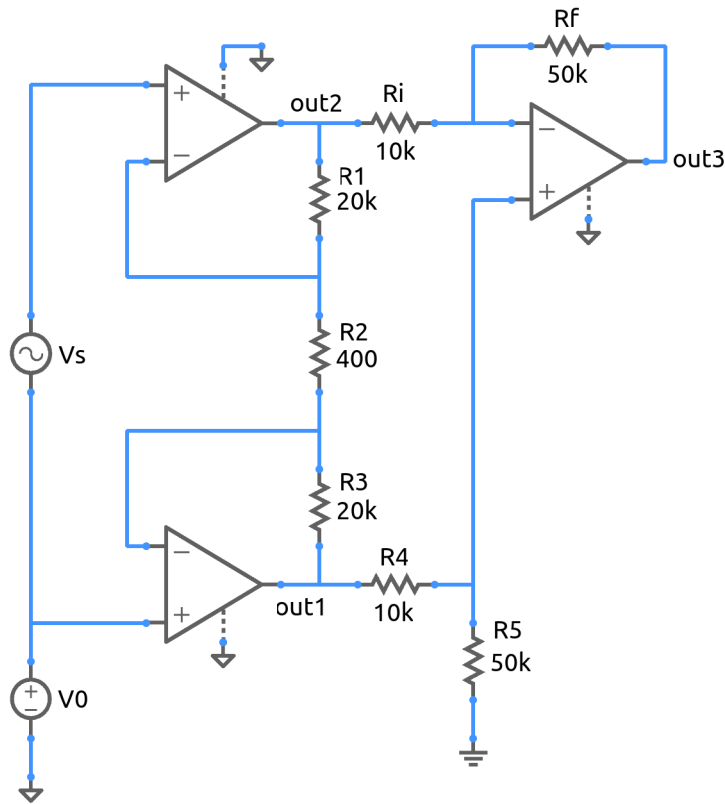


difference_amp.sqproj



Shown in the figure is an instrumentation amplifier. In this circuit file, an idealised Op Amp model is used which is adequate for looking at the basic functionality of the circuit. In the arrangement shown in the figure, the input differential mode voltage is v_s , and the input common-mode voltage is approximately V_0 (since V_0 is much larger in magnitude than v_s).

Exercise Set

1. Assuming that the Op Amps are working in the linear regime, calculate the differential gain (A_d) of the circuit (V_{out3}/V_s). Verify with simulation.
2. Change the common-mode voltage (V_0) from 1 V to 2 V. How do you expect the output to change? Verify with simulation.
3. Do you expect the common-mode gain of the circuit to be affected by a mismatch in the values of R_i and R_4 ? Verify with simulation.

References

1. A. S. Sedra, K. C. Smith, and A. .N. Chandorkar, *Microelectronic Circuits*, Oxford University Press, 2004.