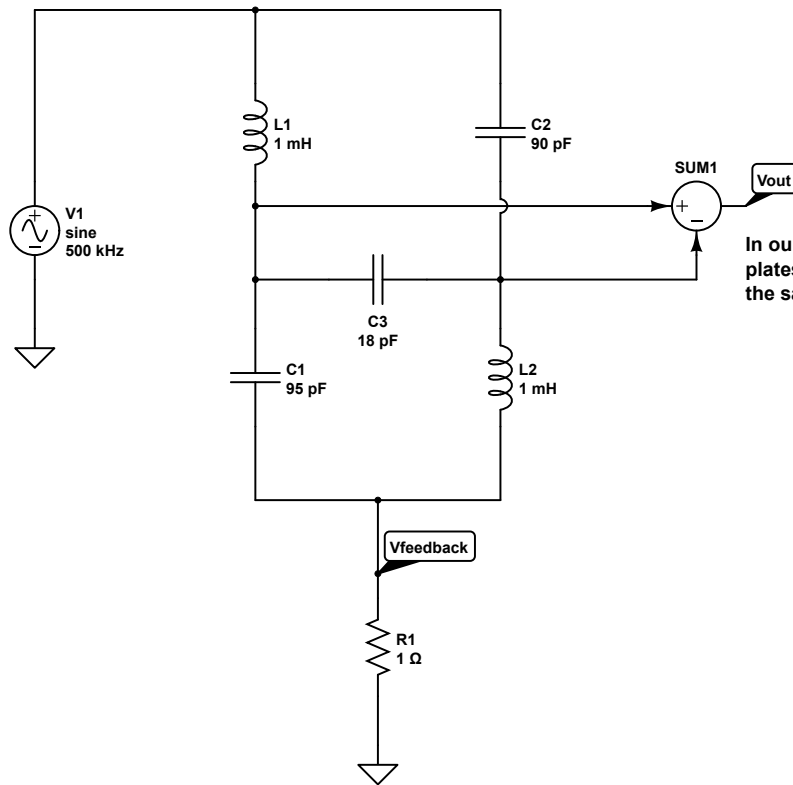


Figure 1

### High Voltage Bi-phase Resonant Signal Generator Simulation Circuit

This circuit was developed for the purpose of providing high frequency, high voltage signals to heat water and other sample materials in the frequencies just inside the lower end and below the AM radio band. Normal operation was to route the VFEEDBACK signal from R1 to the input of a low voltage power amplifier which provided the signal source V1, thus functioning as an oscillator. Here however, we are looking at the deterministic input / output frequency response of the circuit.



In our experiments, this voltage is applied across the parallel capacitive plates of a test fixture / sample holder. Capacitance C3 arises from the fixture, the sample, and the connecting leads.

Ideally, L1 and L2 should have identical values, as should C1 and C2. However, real components have finite tolerances which in this case would manifest themselves as variant series resonant frequencies between L1,C1 and L2,C2. In this context, it turns out that capacitor C3 performs a very unique and useful function in correcting this situation. Figure 2 shows simulation results with and without capacitor C3. It turns out that C3 turns a bifurcated frequency response back into a single frequency response and maintains a high gain and output. In this way, it will also maintain a stable response when used as the feedback element in an oscillator.