

Superposition in Circuits

Electrical Engineering

One source at a time in a linear circuit, then add the contributions with sign.

Linear elements only. The method fails the moment a diode appears.

1

Check linearity first

R, L, C and dependent sources qualify. Diodes and saturating cores do not.

2

Keep one source alive

Zero every other independent source: short voltages, open currents.

3

Solve the simplified circuit

Find that source's contribution to the one branch you actually care about.

4

Repeat for each source

One pass per independent source, keeping the same sign convention throughout.

5

Add the contributions

Algebraic sum, with sign. That total is the real branch current or voltage.

Superposition adds currents and voltages, never powers. Power is quadratic in the variable, so contributions do not add.