

Mesh Analysis

Electrical Engineering

The mesh-current method for planar circuits, supermesh case included.

Unknowns are mesh currents; equations come from KVL.

1

Assign mesh currents

One clockwise current for every window of the planar schematic.

2

Write KVL per mesh

Sum the IR drops round the loop; a shared resistor carries the difference.

3

Deal with current sources

A source shared by two meshes becomes a supermesh; add its constraint.

4

Solve for the mesh currents

One equation per mesh. For a passive network the R matrix is symmetric.

5

Convert to branch currents

A shared branch carries the difference of the two mesh currents through it.

Mesh analysis needs a planar circuit. If the schematic cannot be drawn without a crossing, use nodal analysis instead.