

Line Parameters

Electrical Engineering

What an overhead line contributes electrically, split into series and shunt effects.

Four distributed parameters, only some of which matter at a given length.

Series effects

Resistance climbs with conductor temperature

Inductance follows spacing and bundling

Skin effect raises the AC resistance

Most of the voltage drop is reactive

Bundling cuts both inductance and corona

Shunt effects

Capacitance to earth and between phases

Charging current flows even with no load

A long, lightly loaded line raises far-end volts

Insulator leakage is usually negligible

Corona loss rises in wet weather

Educational reference. A short line needs only series impedance; a long line needs the full distributed-parameter model.