

Spectral Graph Theory – Electric Flow

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1 Introduction

In this notes, we are going to discuss the interesting properties when turning a graph into a network of resistors.

1.1 Electrical Laws

First recall some E&M Laws:

$I = \frac{U}{R}$	Ohm's law
$E = I^2 R$	Energy formula
$ I_{v,in} = I_{v,out} $	conservation of flow

Note that the last law only holds for nodes that are not source or sink.

1.2 Formation on Graph