

CHAPTER OVERVIEW

4: DC Currents

The goal of this chapter is to discuss the distribution of stationary (“dc”) currents inside conducting media. In the most important case of linear (“Ohmic”) conductivity, the partial differential equations governing the distribution are reduced to the same Laplace and Poisson equations whose solution methods were discussed in detail in Chapter 2 – though sometimes with different boundary conditions. Because of that, the chapter is rather brief.

[4.1: Continuity Equation and the Kirchhoff Laws](#)

[4.2: The Ohm Law](#)

[4.3: Boundary Problems](#)

[4.4: Energy Dissipation](#)

[4.5: Exercise Problems](#)

Thumbnail: Basic Wheatstone bridge. (CC BY-SA 4.0 International; Daraceleste via Wikipedia)

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