ELEC 4700

Assignment – 1

Monte-Carlo Modeling of Electron Transport

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# Part 1 – Electron Modeling

Graphical user interface, application

Description automatically generated

Figure 1: Result for Part 1

Chart

Description automatically generated

Figure 2: Plot Particle trajectories and semiconductor temperature with time

# Part 2 – Collisions with Mean Free Path (MFP)

Text

Description automatically generated with medium confidence

Figure 3: Result for part 2

Chart, histogram

Description automatically generated

Figure 4: Plot of Trajectories of electrons and temperature

In part 2, average temperature varies over time. The change is caused by scattering. The average remains 300K with time.

# Part 3 – Enhancements

Chart, histogram

Description automatically generated

Figure 5: Trajectories of electrons and temperature of electrons plot

Graphical user interface, chart

Description automatically generated

Figure 6: Electron density Map

Chart

Description automatically generated

Figure 7: Temperature Map