



EC210 – Solid State Electronics

Lab 5

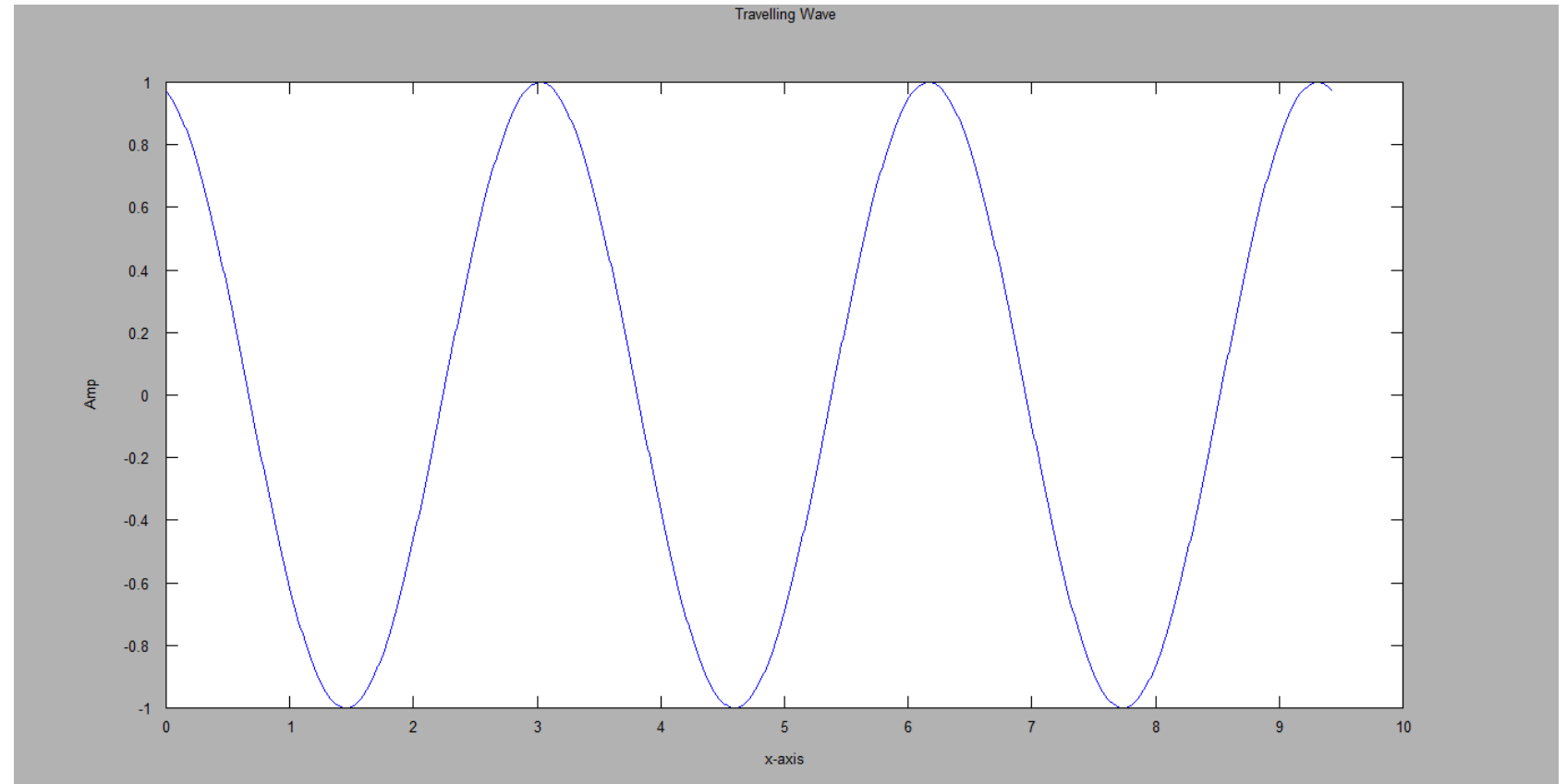
Traveling Wave & Schrodinger Equation

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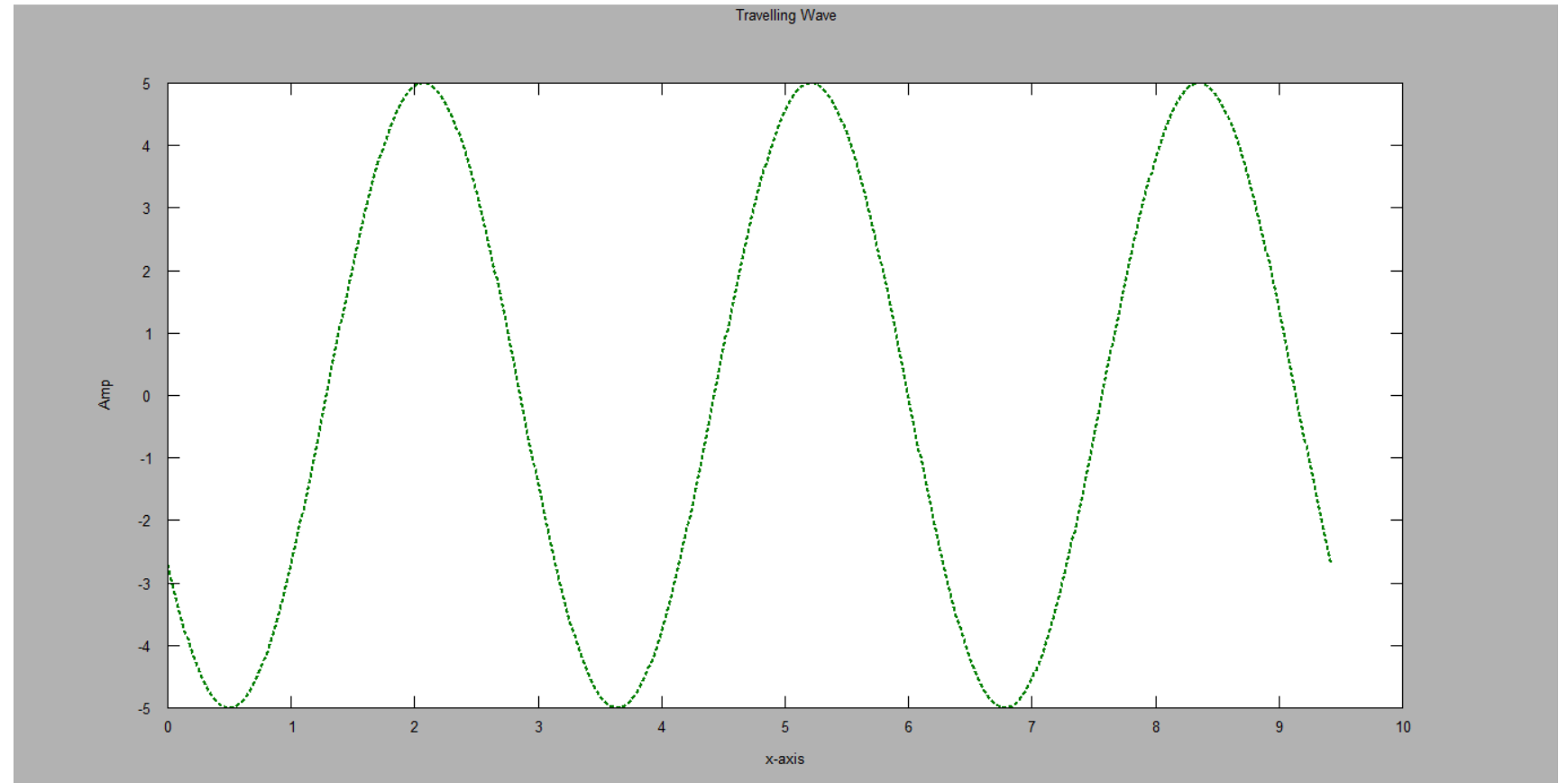
Outline

- Traveling wave by using sine function
- Traveling wave by using cosine function
- Traveling wave by using exponential function
- Schrodinger equation plotting

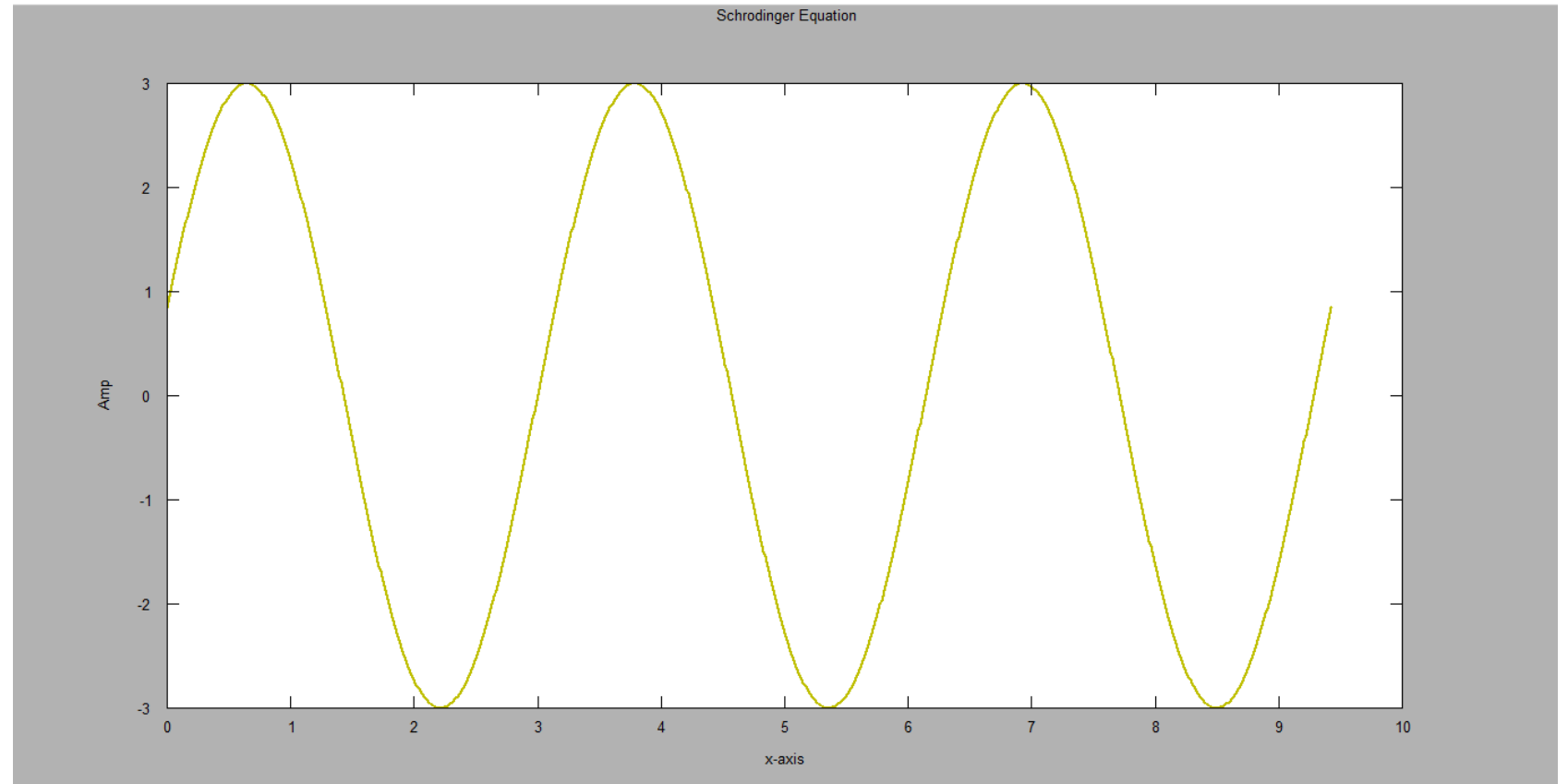
FreeMat Code (T.W) Cosine Function



FreeMat Code (T.W) Sine Function



FreeMat Code Schrodinger Equation



Code

```
1  clc
2  close all
3  clear all
4  x=linspace(0,3*pi,1000);
5  k=2;
6  w=5;
7  for t1=0:0.01:3
8      figure(1)
9      T_W_1= cos(k.*x-w.*t1);
10     plot(x,T_W_1);
11     title('Travelling Wave')
12     xlabel('x-axis')
13     ylabel('Amp')
14     drawnow;
15 end
16 for t2=0:0.01:3
17     figure(2)
18     T_W_2= 5*sin(k.*x-w.*t2);
19     plot(x,T_W_2,':g','linewidth',2);
20     title('Travelling Wave')
21     xlabel('x-axis')
22     ylabel('Amp')
23     drawnow;
24 end
25 for t3=0:0.01:3
26     figure(3)
27     S_E=3*exp(-(k.*x-w.*t3)*i);
28     plot(x,S_E,'y','linewidth',2);
29     title('Schrodinger Equation')
30     xlabel('x-axis')
31     ylabel('Amp')
32     drawnow;
33 end
```

Thank you for your attention