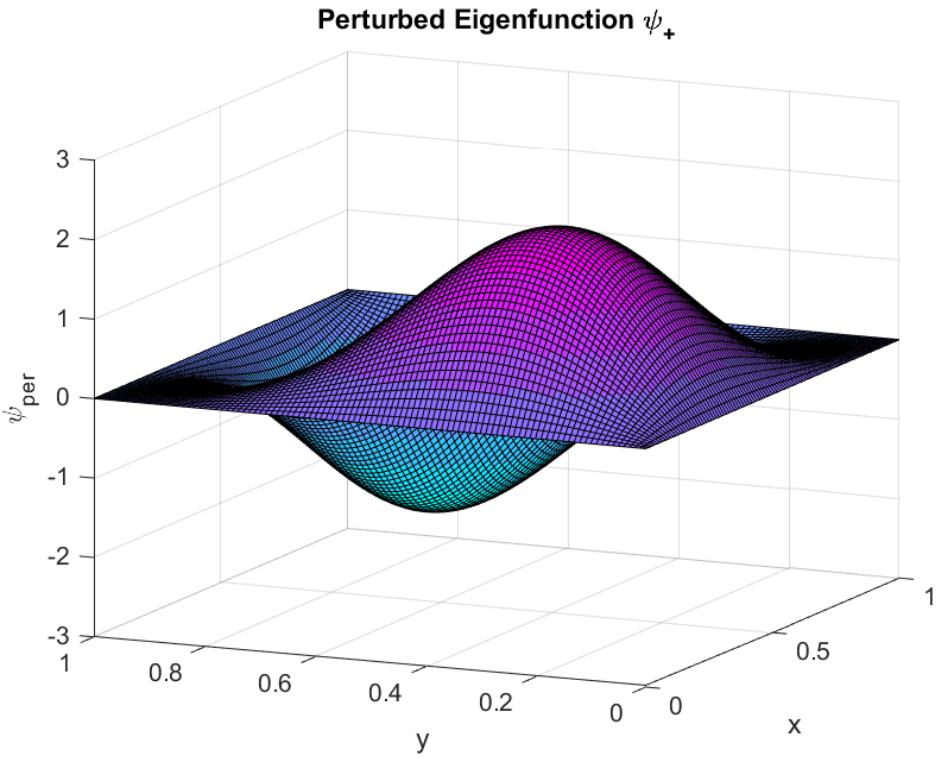
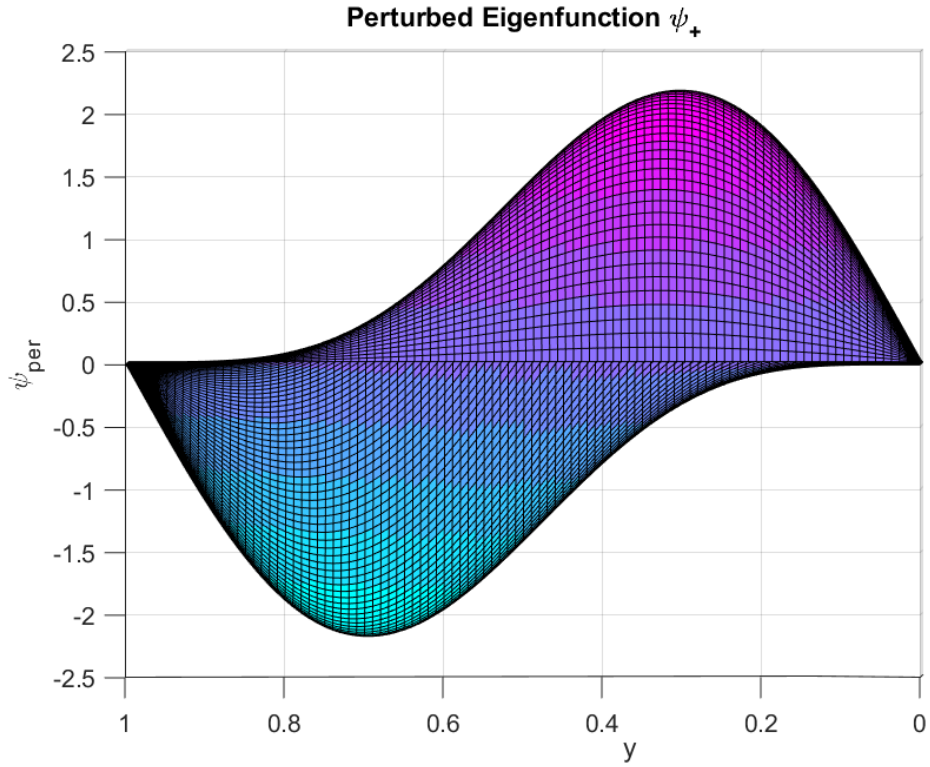
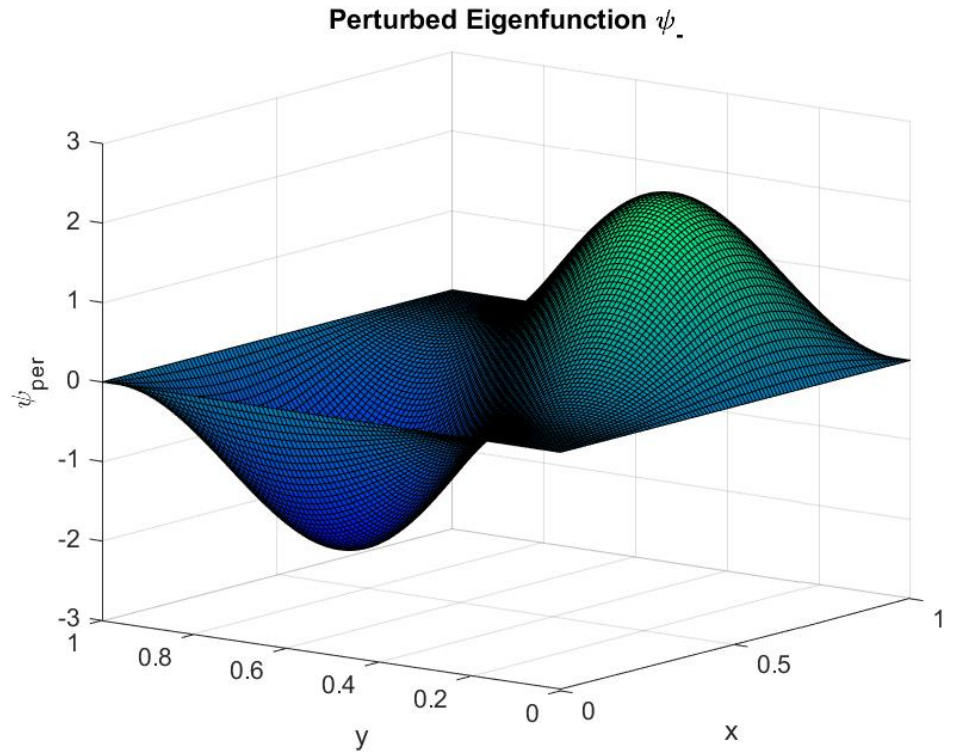


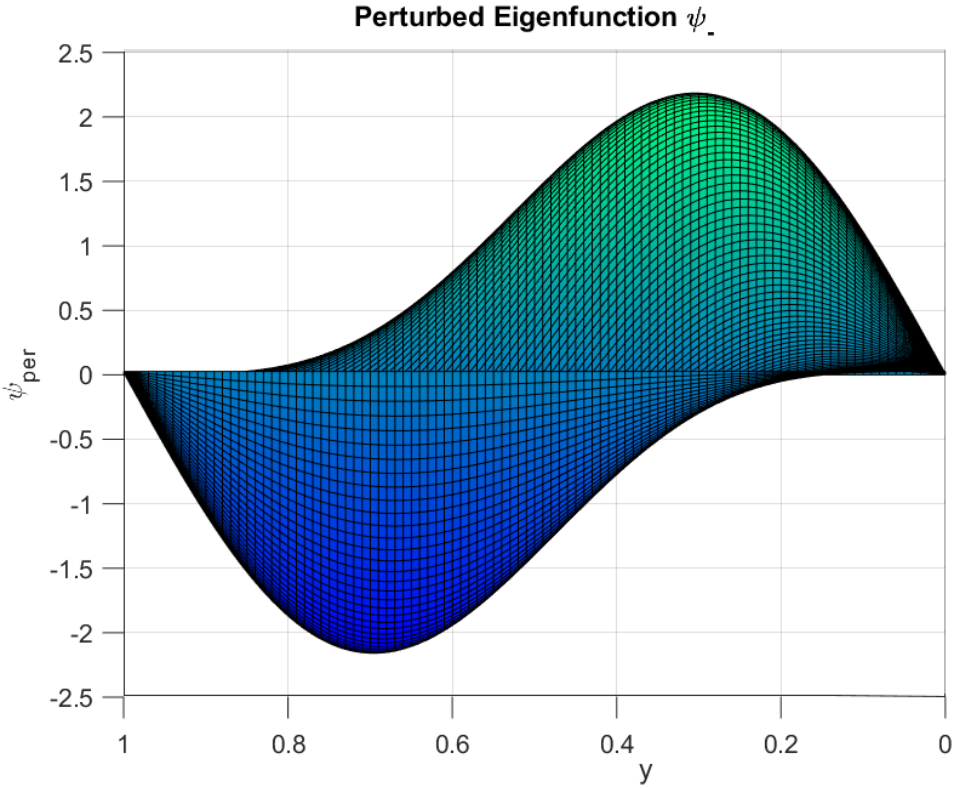
3-d view



2-d view



3-d view



2-d view

MATLAB CODE FOR PART 3

```
%parameters
a = 1.0; % length in metres

[x,y] = meshgrid(0:0.01:1,0:0.01:1);

psi_12 = (2/a).*(sin(1.*pi.*x/a)).*(sin(2.*pi.*y/a));
%second eigenfunction
psi_21 = (2/a).*(sin(2.*pi.*x/a)).*(sin(1.*pi.*y/a));
%second eigenfunction
zper1 = 1/sqrt(2)*(psi_12+psi_21);
zper2 = 1/sqrt(2)*(psi_12-psi_21);

figure
z1 = surf(x,y,zper1);
colormap(cool(10));
title("Perturbed Eigenfunction \psi_+");
xlabel("x"),ylabel("y"),zlabel("\psi_p_e_r");

figure
z2 = surf(x,y,zper2);
colormap(winter);
title("Perturbed Eigenfunction \psi_-");
xlabel("x"),ylabel("y"),zlabel("\psi_p_e_r");
```

References

- Modern Quantum Mechanics. Second Edition. JJ Sakurai, Jim Napolitano
- Introduction to Quantum Mechanics. Second Edition. David J. Griffiths
- https://in.mathworks.com/help/matlab/
- Lecture notes