**FIND ENERGY EIGENVALUE AND**

**PLOT THE SOLUTION OF**

**SCHRODINGER EQUATION FOR**

**DEUTERON**

**SOURCE CODE:**

clc;

clear;

clf;

m=419; h=197.3;a=1.5;g=70.84

n=input("Enter n: ")

A=eye(n,n)

A=A\*(-2)

for i=1:n-1

A(i+1,i)=1

A(i,i+1)=1

end

r=linspace(1D-8,40,n)

V=zeros(n,n)

for i=1:n

V(i,i)=-g\*exp((-r(i)^2)/(a^2))

end

k=(40-(1D-8))/n

disp(k)

B=(-(h^2)/(2\*m\*k^2))\*A+V

[u,E]=spec(B)

disp(E(1,1),"Ground state energy:")

plot(r',u(:,1))

**OUTPUT:**

Enter n: 450

0.0888889

Ground state energy:

-2.1988232

