close all; clear all; clc;

z=linspace(-8,0,1000);

m=zeros(1,1000);

i=0;b=2;w=5;%i is time

for k=1:250

Ei=cos(w\*i-2\*z);

Er=-cos(w\*i+2\*z);

Hi=0.5\*cos(w\*i-2\*z);

Hr=0.5\*cos(w\*i+2\*z);

E=Ei+Er;

H=Hi+Hr;

subplot(2,2,1);

plot(z,Ei,'--m',z,Er,'--m',z,E,'k');

ylabel("\color{black}E(z)\color{green} = \color{magenta}Ei(z)+Er(z)");

xlabel("z");

axis([-8 0 -2 2]);

subplot(2,2,3)

plot(z,Hi,'--b',z,Hr,'--b',z,H,'r');

ylabel("\color{red}H(z)\color{green} = \color{blue}Hi(z)+Hr(z)");

xlabel("z");

axis([-8 0 -2 2]);

subplot(2,2,[2,4]);

plot3(Ei,m,z,'--m',Er,m,z,'--m',E,m,z,'-k');

hold on

plot3(m,Hi,z,'--b',m,Hr,z,'--b',m,H,z,'-r');

hold off

xlabel("\color{black}E(z)\color{green} = \color{magenta}Ei(z)+Er(z)");

ylabel("\color{red}H(z)\color{green} = \color{blue}Hi(z)+Hr(z)");

zlabel("z");

axis([-4 4 -4 4 -8 0]);

grid on;

pause(0.2);

i=i+0.01;

end