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clear all;
clc;
hbar = 1.054e-34;
m0 = 9.1e-31;
meff = 0.1;
melec = meff*m0;
eV2J = 1.6e-19;
J2eV = 1/eV2J;

U = [1 1]*eV2J;
a=1e-9;

if (U(1)~=0 && U(2)~=0)
    k_max = sqrt(2*melec*min(U))/hbar;
    k = linspace(0,k_max);
    F_1 = pi-asin(k*hbar/sqrt(2*melec*U(1)))-asin(k*hbar/
sqrt(2*melec*U(2)));
    F_2 = k*a;
    difference = abs(F_2-F_1);
    difference1 =min(difference);
    inDex = 0;
    for i = 1:length(k)
        if difference(i) == difference1
            inDex = i;
        end
    end
    k_find = k(inDex);
    %[x,y]=max(difference1);
    %k_fin=k(y);
    E = hbar^2*k_find^2/(2*melec)*J2eV;
else
    E = pi^2*hbar^2/(2*melec*a^2)*J2eV;
end

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