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clear all

figure

grap = load ('data.txt'); %File Loading

sd=grap(:,2); %second colom, Volatage in milli Volts

%space=10;

spacing = input ('entry data spacing = ');

xgr=grap(:,1); %position

for k=1:length(xgr)-1;

 v(k)=(sd(k+1)-sd(k))/spacing;

end;

D=2\*sqrt(2)/sqrt(pi\*sum(v.^2));

k=length(v);

k1=input('Entry max dept of model : '); %maximum dept

disp('Wait a minutes..... processing !');

subplot(2,1,1);

plot(xgr,sd,'.b');title('Voltages (-)');ylabel('mV')

hold on;

for si=1:k;

 for do=1:k1;

 sum1=0;

 for x=1:k;

 n=v(x)\*(x-si)/(sqrt((x-si)^2+do^2)^3);

 sum1=sum1+n;

 end;

 nu(do,si)=(sum1\*sqrt(do^3)\*(-D));

 xxx(do,si)=xgr(si);

 zzz(do,si)=do;

 end;plot(xgr,sd,'.b')

end;

subplot(2,1,2);

xa=1:k;

xa1=0:k1;

surf(xxx,zzz,nu);

axis('ij');

view(2);title('Charge Occurence Probability Map');

ylabel('Depth (m)');

shading flat;shading interp;

colormap(jet);

colorbar;