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clc
close all; clear all;
%Define global variables
global u0
global I0
u0=4*pi*1e-7; %permeability of free space
I0=1; %Coil current in Amps

% figure(1)
AT=dlmread(['4.txt']);
Z = AT(:, 3);
Bx =AT(:, 4);
By =AT(:, 5);
Bz = AT(:, 6);
B = sqrt(Bx.^2+ By.^2 + Bz.^2);
new_table = [Z B];
out1=sortrows(new_table,1);
R1=0.6; %Coil radius in m
R2 = 0.4;
R = sqrt(R1.^2 + R2.^2);
d =0.5;
part1 = (u0*I0*R.^2)/2;
part2 = 1/((Z.^2+R.^2).^(3/2)) + 1/(((Z-d).^2+R.^2).^(3/2));
part3= part1*part2;
p3 = part3';
final1 = [out1 p3];
writematrix(final1, 'theory4.xlsx', 'Sheet',1);
```

*Published with MATLAB® R2020a*