```
clear ; close all ; clc ;

% silicon
    % Stopping powers
        % electrons
        spes = 1.531 ;
        % protons
        spps = 1.754e2 ;
        % alpha
        spas = 1.296e3 ;
    rhoskg = 2300 ; % density of silicon in kg/m^3
    rhos = rhoskg*(1e3)/(1e2)^3 ; % g/cm^3
    % Penetration Depth
        Res = 1/(rhos*spes) ;
        Rps = 1/(rhos*spps) ;
        Ras = 1/(rhos*spas) ;
disp( 'a' )
disp( 'The stopping power of alpha particles is largest so it will do
 the ')
disp( 'most damage but electrons will reach the furthest ')
disp( 'Penetration Depth in Silicon' )
disp([ 'Electrons  ' , num2str(Res) , ' meters' ])
disp([ 'Protons  ' , num2str(Rps) , ' meters' ])
disp([ 'Alpha  ' , num2str(Ras) , ' meters' ])
disp( ' ' )
% Aluminum
    % Stopping powers
        % electrons
        spea = 1.486 ;
        % protons
        sppa = 1.720e2 ;
        % alpha
        spaa = 1.226e3 ;
    rhoakg = 2700 ; % density of aluminum in kg/m^3
    rhoa = rhoakg*(1e3)/(1e2)^3 ; % g/cm^3
    % Penetration Depth
        Rea = 1/(rhoa*spea) ;
        Rpa = 1/(rhoa*sppa) ;
        Raa = 1/(rhoa*spaa) ;
disp( 'b' )
disp( 'The stopping power of alpha particles is largest so it will do
 the ')
disp( 'most damage but electrons will reach the furthest ')
disp( 'Penetration Depth in Aluminum' )
disp([ 'Electrons  ' , num2str(Rea) , ' meters' ])
disp([ 'Protons  ' , num2str(Rpa) , ' meters' ])
disp([ 'Alpha  ' , num2str(Raa) , ' meters' ])
disp( ' ' )
% Graphite
    % Stopping powers
        % electrons
        speg = 1.627 ;
```

```
        % protons
        sppg = 2.297e2 ;
        % alpha
        spag = 1.893e3 ;
    rhogkg = 2150 ; % density of silicon in kg/m^3
    rhog = rhogkg*(1e3)/(1e2)^3 ; % g/cm^3
    % Penetration Depth
        Reg = 1/(rhog*speg) ;
        Rpg = 1/(rhog*sppg) ;
        Rag = 1/(rhog*spag) ;
disp( 'b' )
disp( 'The stopping power of alpha particles is largest so it will do
 the ')
disp( 'most damage but electrons will reach the furthest ')
disp( 'Penetration Depth in Graphite' )
disp([ 'Electrons  ' , num2str(Reg) , ' meters' ])
disp([ 'Protons  ' , num2str(Rpg) , ' meters' ])
disp([ 'Alpha  ' , num2str(Rag) , ' meters' ])

disp(' ' )
disp( 'The aluminum functions best as a radiation shield as the
 radiation' )
disp( 'penetrates the least far in it' )
```

```
a
The stopping power of alpha particles is largest so it will do the
most damage but electrons will reach the furthest
Penetration Depth in Silicon
Electrons  0.28399 meters
Protons  0.0024788 meters
Alpha  0.00033548 meters

b
The stopping power of alpha particles is largest so it will do the
most damage but electrons will reach the furthest
Penetration Depth in Aluminum
Electrons  0.24924 meters
Protons  0.0021533 meters
Alpha  0.0003021 meters

b
The stopping power of alpha particles is largest so it will do the
most damage but electrons will reach the furthest
Penetration Depth in Graphite
Electrons  0.28587 meters
Protons  0.0020249 meters
Alpha  0.0002457 meters

The aluminum functions best as a radiation shield as the radiation
penetrates the least far in it
```

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