Optimize Discretization

Table of Contents

[nhinc,nwinc]=optimize_discr(w,h,rh,rw,delta)

Optimizes the discretization of the conductors leaving delta as the smallest filament Returns the discretization values nhinc and nwinc rh,rw is the relation of height and width of following filaments

Parameters

- @param **w** Width of conductor
- @param **h** Height of conductor
- @param **rh** Height relation of Following Filaments
- @param **rw** Weight relation of Following Filaments
- @param **delta** Skin effect
- @retval **nhinc** Number of Height Filaments
- @retval **nwinc** Numer of Weight Filaments

Code

```
function [nhinc,nwinc]=optimize_discr(w,h,rh,rw,delta)
 nhinc=optimize_size(h,rh,delta);
 nwinc=optimize_size(w,rw,delta);

%mu0=4*pi*1e-7;
%freq=500e3;
%skin=sqrt(2*(1/5.8e7)/(2*pi*freq*mu0));

%%Auxiliar Function
function [nwinc]=optimize_size(w,rw,delta)

 sum=0;
 if delta<w %No need to discretizate the cable
  for nwinc=2:2:100
   sum=sum+2*rw^((nwinc-2)/2)*delta; %nwinc even
   if sum>=w
    break;
   end
```

```
  aux=sum+rw^(nwinc/2)*delta; %nwinc odd
  if aux>=w
   nwinc=nwinc+1;
   break;
  end
 end
else
 nwinc=1;
end
```

Discretization

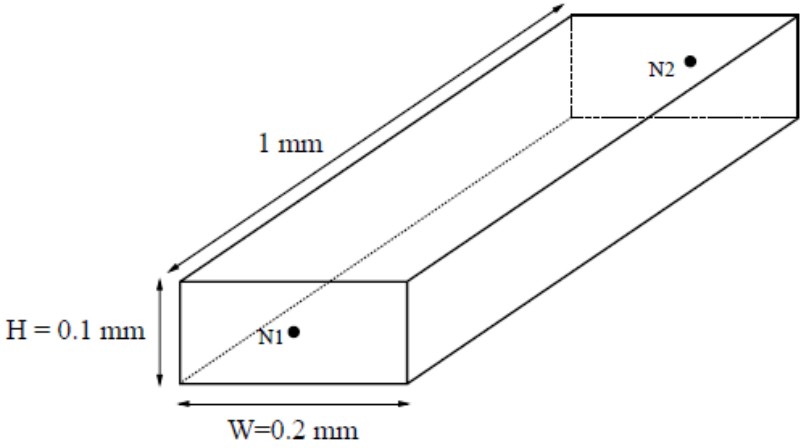


Figure 1: Example Segment for Sample Input File

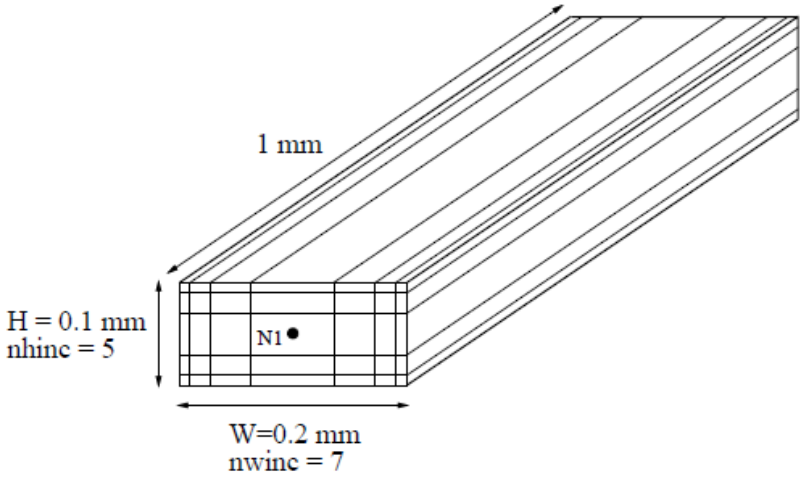
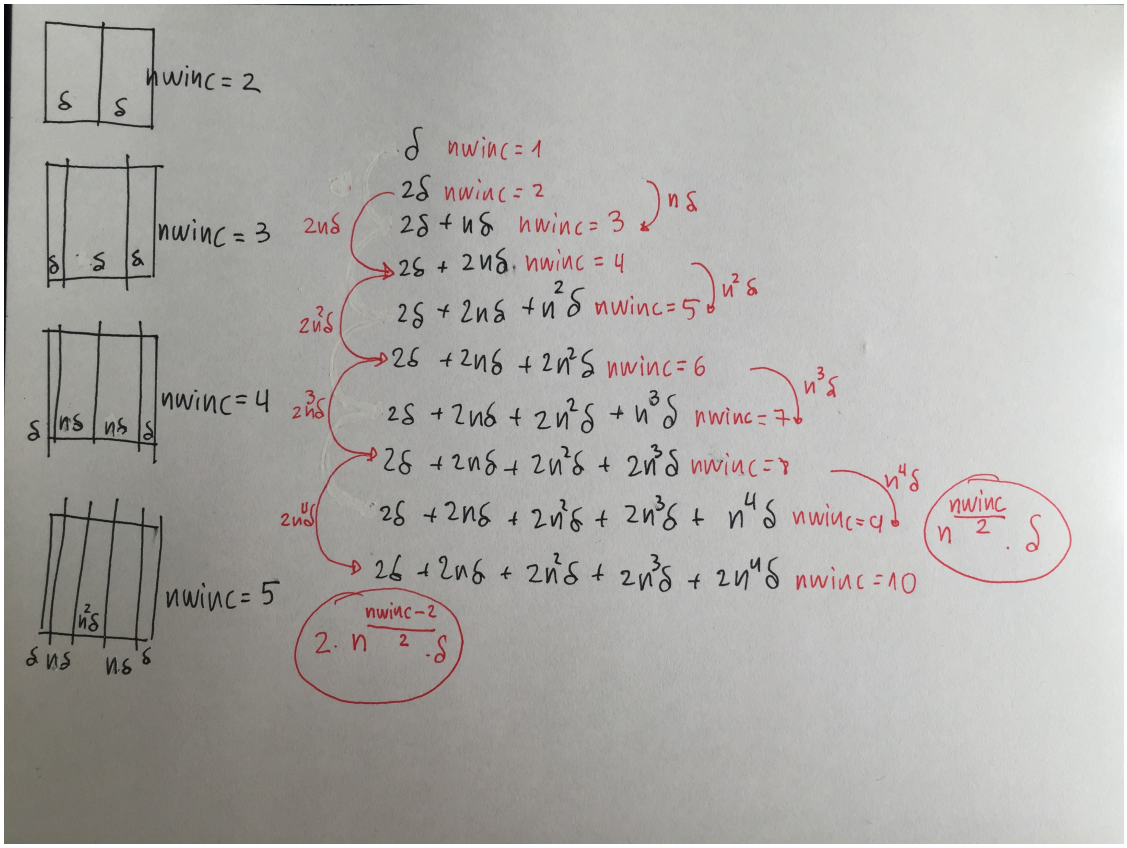


Figure 2: Segment discretized into 35 filaments



Published with MATLAB® R2018b