Optimize Discretization

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

Author: JCCopyrights Summer 2019 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 %Maximum allowed discretization 100x100
    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
end
else
  nwinc=1;
end
```

Discretization

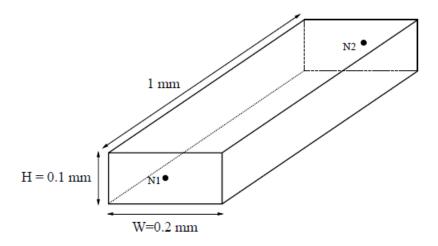


Figure 1: Example Segment for Sample Input File

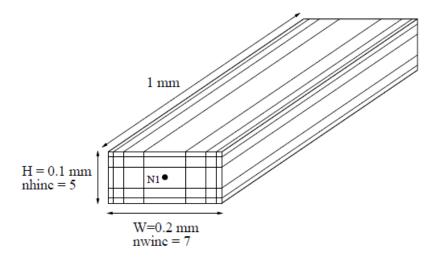
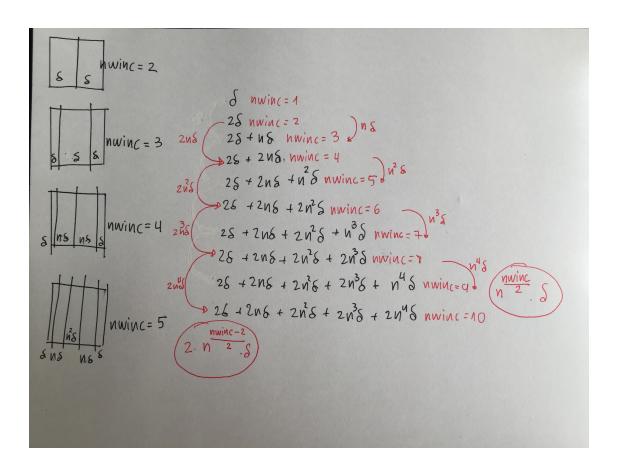


Figure 2: Segment discretized into 35 filaments



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