
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
            end
        end
    end
```

```

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

```

Discretization

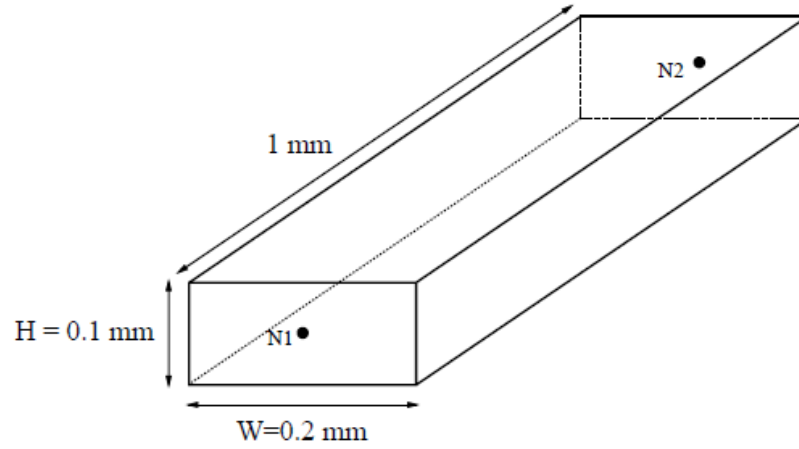


Figure 1: Example Segment for Sample Input File

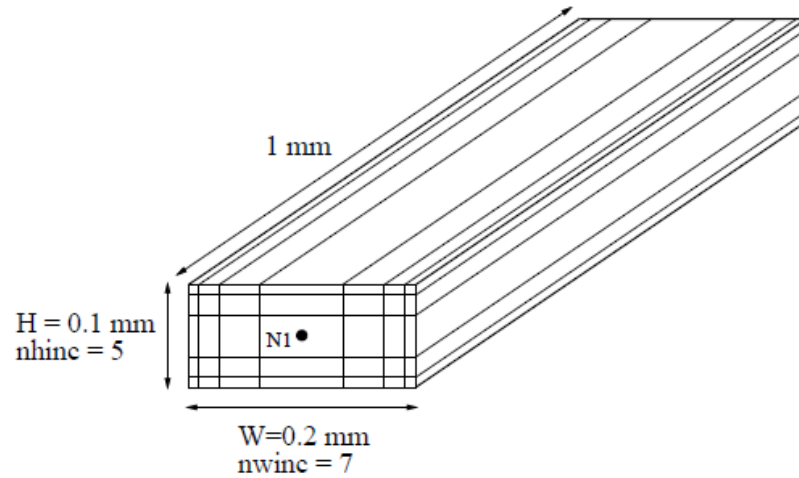


Figure 2: Segment discretized into 35 filaments

