
Real Coil

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[Rs, Ls, fres]=real_coil(L,R,C,f)

Author: JCCopyrights Summer 2019 This function takes the inductance, resistivity and resistance of a real coil model(C//RL) and returns the Series resistance and inductance of the series model (RL), and the resonance frequency. Use this function to take into account the resonance effects over the impedance after creating a model with FastHenry

Parameters

- @param **L** Inductance
- @param **R** Winding resistivity (Copper Losses)
- @param **C** Parasitic capacitance
- @param **f** Working frequency
- @retval **Rs** Series Real Impedance
- @retval **Ls** Series Inductance
- @retval **fres** LC resonance frequency

Code

```
function [Rs, Ls, fres]=real_coil(L,R,C,f)
w=2*pi*f;
Zre=R./(w.^2.*R.^2*C^2+(1-L*C*w.^2).^2);
Zim=(w.*L.*(1-w.^2.*L.*C-(C.*R.^2)./L))./(w.^2.*R.^2.*C^2+(1-L.*C.*w.^2).^2);
Z=sqrt(Zre.^2+Zim.^2);
Rs=Zre;
Ls=Zim/w;
fres=1/(2*pi*sqrt(L*C));
```

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