Lecture 12

Friday, 16 February 2024 3:37 PM

EE114 - Power Engineering 1

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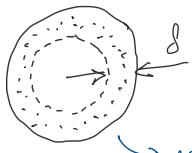
* Skin effect :-

In AC circuits, the current tends not to flow uniformly across the crossection of wire. It flows at the outer periphery of the wire (near the surface of wire. This changes the effective resistance of the wire.

$R_{dc} \neq R_{ac}$



δ → skin depth

→ crossection of wire

$R_{ac} \propto \delta \propto \frac{1}{F}$

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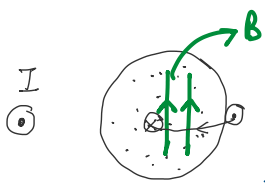
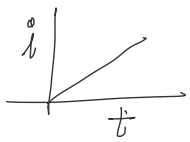


Suppose flux is increasing as



Due to lenz law, a current tends to flow such as to reduce B due to I. It tends to flow in a loop as shown in the cross section. The current in the midde of wire gets cancelled. Therefore, net current flows at the periphery.