Block 03 — Complex Calculus in EE

Student Group

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Learning objectives

After this 90-minute block, you

- know how sine variables can be symbolized by a vector.
- know which parameters can determine a sinusoidal quantity.
- graphically derive a pointer diagram for several existing sine variables.
- can plot the phase shift on the vector and time plots.
- can add sinusoidal quantities in vector and time representation.
- know and apply the impedance of components.
- know the frequency dependence of the impedance of the components. In particular, you should know the effect of the ideal components at very high and very low frequencies and be able to apply it for plausibility checks.</callout>

Preparation at Home

Well, again

- read through the present chapter and write down anything you did not understand.
- Also here, there are some clips for more clarification under 'Embedded resources' (check the text above/below, sometimes only part of the clip is interesting).

For checking your understanding please do the following exercises:

- …

90-minute plan

1. Warm-up (x min):
    1. ….
2. Core concepts & derivations (x min):
    1. …
3. Practice (x min): …
4. Wrap-up (x min): Summary box; common pitfalls checklist.

Conceptual overview

<callout icon=“fa fa-lightbulb-o” color=“blue”>

1. …

Core content

…

Common pitfalls

- …

Exercises

Worked examples

…

Embedded resources

Explanation (video): …

The following two videos explain the basic terms of the complex AC calculus: Impedance, Reactance, Resistance