

Computer Simulations

ECEN 4138 Control Systems Analysis - Fall 2022
Talles Santos

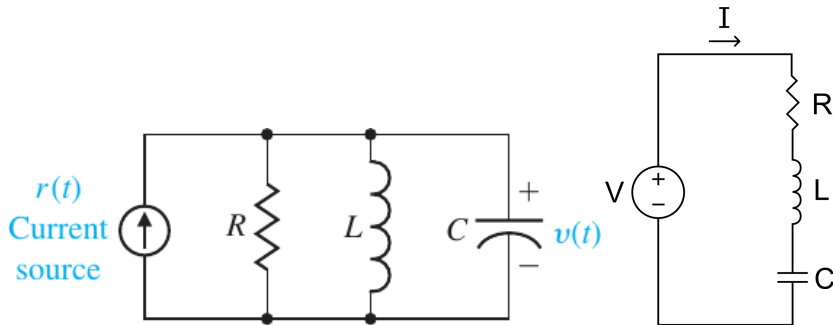
Lecture 10



Previous class & homework

Determine (analytically) $H(s)$

*Capacitor and inductor in the circuit may be charged.



Using Matlab, solve numerically $H(s)$ and find $h(t)$. Setting values for the components in the circuit, provide 2 examples and show graphically the step response and freq. response.

*Upload on Canvas the `.m` routine(s) in a zip code and share a link of the same routine using github tool.

Previous class & homework



- Initial condition is not null !!!
- How to solve it?
 - Second Order Differential Equation with initial condition is **out of scope** (for now)!
 - E.g.: [Analytic solution](#), [Numerical Solution](#) and [RLC series and parallel duality](#)

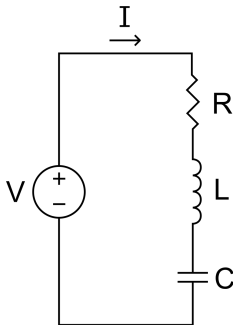
Previous class & homework

Lets try to solve when the initial condition is zero?

RLC series

Determine (analytically) $H(s)$, where $h(t) = \frac{V_c}{V}$

*Capacitor and inductor in the circuit are discharged. (See [link1](#))



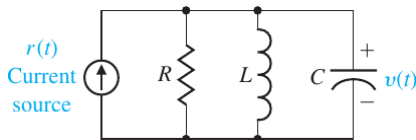
Using Matlab, solve numerically $H(s)$ and find $h(t)$. Setting values for the components in the circuit, provide 2 examples and show graphically the step response and freq. response.

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RLC paralel

Determine (analytically) $H(s)$, where $h(t) = \frac{i_L}{r}$

*Capacitor and inductor in the circuit are discharged. (See [link2](#) and [link 3](#))



Using Matlab, solve numerically $H(s)$ and find $h(t)$. Setting values for the components in the circuit, provide 2 examples and show graphically the step response and freq. response.

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RLC paralel

- Go to github
- Update the repository
(ECEN4138_ControlSystemsAnalysis_Fall2022_HW02)
- Modify the function to transform the RLC series routines to RLC parallel