

Deslib Matlab Library

- Install Matlab
- Download from the course webpage

Electrical and information technology > Course Material

Course facts

Course Description

Course Information

Course Material

Laboratory Lessons

Schedule

Lectures

Messages

Sign up

Results

ETIN50 RF Amplifier Design
2016/2017 Ht2
Course Material

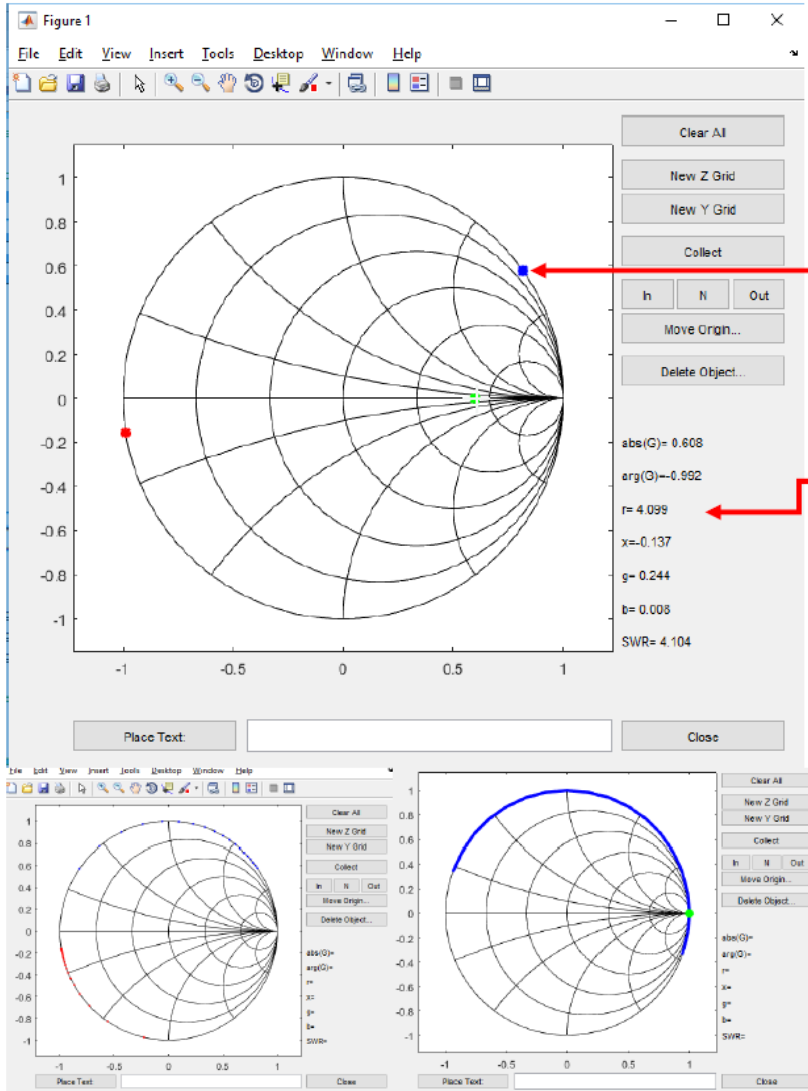
- some password protected material is exclusively available for the course members

contents		date	files / links
Radio Electronics <i>L. Sundström, G. Jönsson and H. Börjeson, Lund University 2015</i>	Edition 2015	2015-10-01	RadioElectronics
Exercises and Laboratory Experiments <i>L. Sundström, L. Durkalec and G. Jönsson, Lund University 2015</i>	Edition 2015	2015-10-01	ExerLab
Reading instructions			See the Schedule page.
Slides from the lectures			See the Lectures page.
Toolbox for MATLAB		2016-12-07	deslib1612.zip
Hand-in assignments	nr	Deadline	
	1	2016-11-20	handinex1.pdf
	2	2016-12-02	handinex2.pdf
Smith Chart	Simple (Z)		Black_Magic.pdf
	Double (ZY)		rc.smith_colour.pdf
	external link		SSS Online, Inc
Example exam 1 & 2 with short answers			exampleexam_etin50_en.pdf

Unzip the package at a location of your choice

Demo Files

1. Run the demo file
2. Learn how deslib works
3. Start with the hand-in



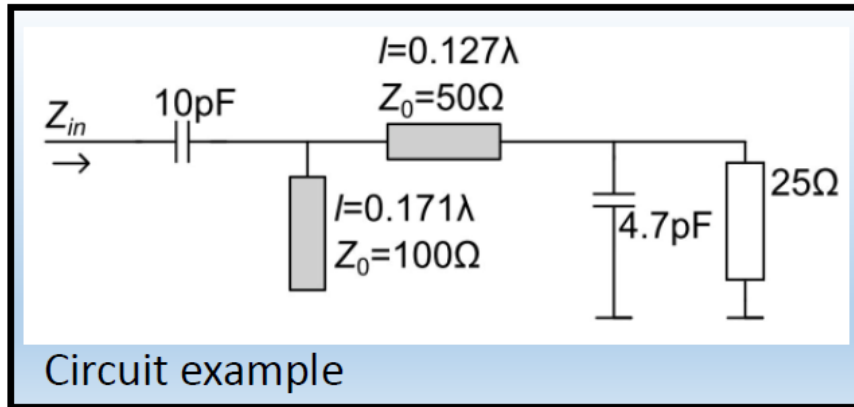
Demo 1: Displaying R, L and C in the Smith chart.

Plot the impedance (good practice)
Read normalized values

Demo 2: Plot L and C versus frequency in the Smith chart

Demo 3: Frequency behavior of a stub

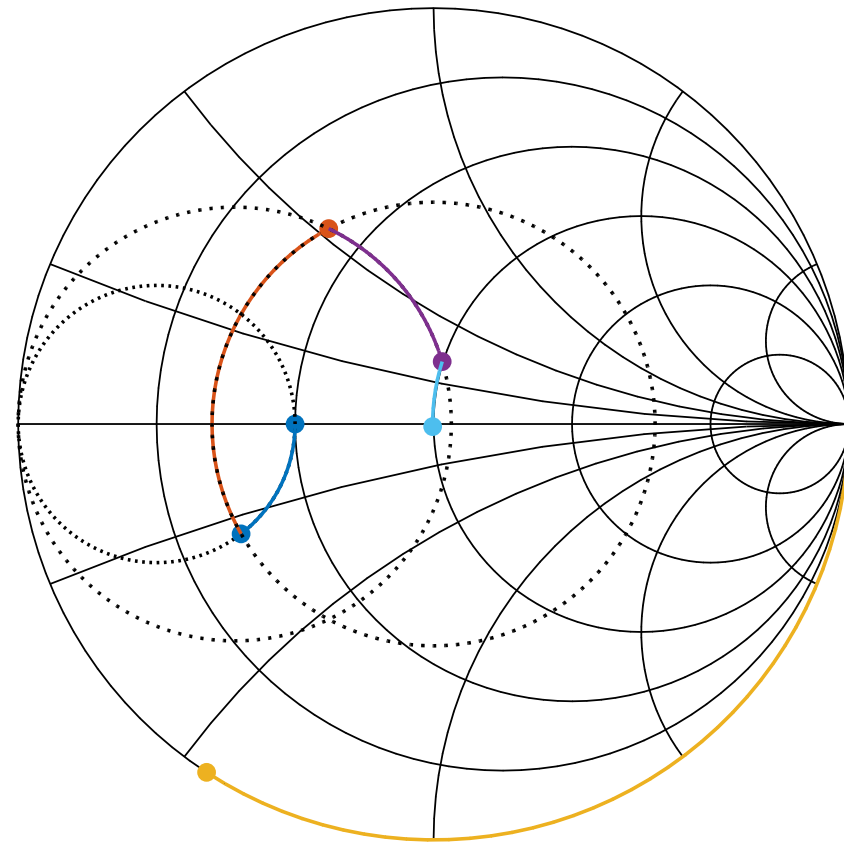
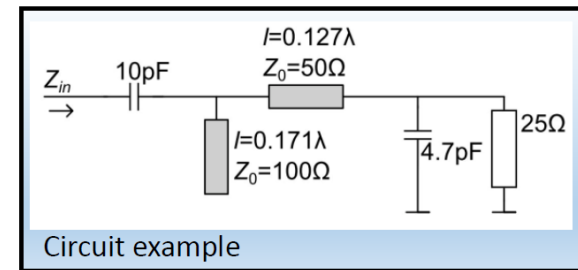
Circuit Example



1. Do the matching on paper for $f=1\text{GHz}$
2. Implement the network in matlab using deslrb
3. Verify the results
4. Add a frequency vector
5. Plot the mismatch loss

Circuit Example: Solution

1. Transform Z_L to reflection factor
 $G_L = [z2g(Z_L, Z_{01}), f];$
2. connect capacitance in series
 $G_1 = \text{parc}(G_L, C_1, Z_{01});$
3. Calculate transmission line in series.
 $G_2 = \text{serline}(G_1, l, f);$
4. Calculate the reflection of the open parallel stub
 $G_{\text{stub}} = \text{serline}(G_{\text{open}}, l_2, f);$
5. Renormalize the reflection coefficient of the stub to 50 Ohm
 $G_{\text{stub}50} = \text{renorm}(G_{\text{stub}}, Z_{02}, Z_{01});$
6. connect the stub and the other calculated parts in parallel
 $G_3 = \text{parg}(G_2, G_{\text{stub}50});$
7. Add series capacitance
 $G_{\text{in}} = \text{serc}(G_3, C_2, Z_{01});$
8. convert the result to an impedance
 $Z_{\text{in}} = g2z(G_{\text{in}}, Z_{01});$



Deslib Quick Reference

Command	Description
<code>z2g</code>	Convert impedance to reflection
<code>g2z</code>	Convert reflection to impedance
<code>serline</code>	Connect series transmission line
<code>serl</code>	Connect series inductor
<code>serc</code>	Connect series capacitor
<code>serr</code>	Connect series resistor
<code>parl</code>	Connect parallel inductor
<code>parc</code>	Connect parallel capacitor
<code>parr</code>	Connect parallel resistor
<code>parg</code>	Connect two circuits with known reflection coefficient in parallel
<code>renorm</code>	Renormalize reflection coefficient to new characteristic impedance

For information about the commands type `help command` in the matlab commandline