You first circuit: RLC bandpass filter

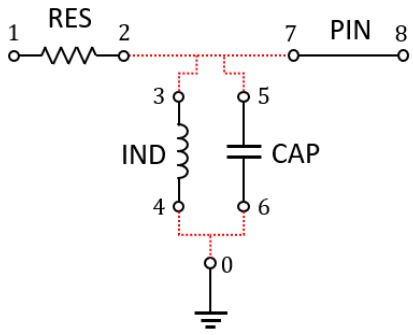

Figure 1. Schematic of elements connection

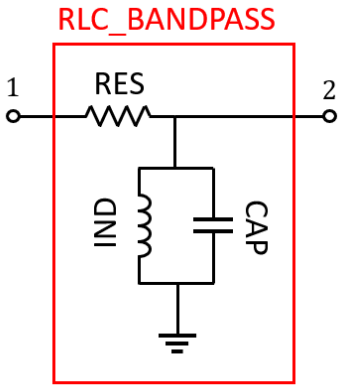

Figure 2. New 2-port RLC bandpass network

```
clear
SI_units % Load SI units system

R = 1*ohm;
C = 50*pF;
L = 3*nH;

crt = FloquetCircuit(); % create a new CFSM circuit
crt.freq = linspace(0.001,1,300)*GHz; % specify frequency range

% Add components to the circuit
add_resistor(crt, 'RES', R);
add_inductor(crt, 'IND', L);
add_capacitor(crt, 'CAP', C);
add_pin(crt, 'PIN');

% The main difference compared to other circuit simulators is that you will be connecting
% elements by ports. This allows for some of the key functionlities of the CFSM method
% such as iterative circuit assembly, treatment of lumped elements and subcircuits on
% equal footing, and periodicity analysis.
%
% Make a diagram as shown on the image above. Label the ports of the elements in the
% order you will be connecting these elements together.
% Here, we need to connect ports [2,3,5,7] and [4,6,0].
% Note that port 0 is the ground.

% connect_by_ports() is the key function which creates a new subnetwork comprised of
% several elements.
% Here, we name the new subnetwork 'RLC_BANDPASS' and we list all the children elements
% comprising this subnetwork, i.e. 'RES', 'CAP', 'IND', 'PIN'.
% Next, we specify the ports which we want to connect together, i.e. [2,3,5,7] and [4,6,0].
connect_by_ports(crt, 'RLC_BANDPASS', {'RES','IND','CAP','PIN'}, {[2,3,7,5], [4,6,0]});

% Run the CFSM analysis to compute S-parameters
crt.analyze();

figure
subplot(2,1,1)
plot_sparam_mag(crt, 'RLC_BANDPASS', {'S(1,1)','S(2,1)'}, 'XUnits', 'GHz');
subplot(2,1,2)
plot_sparam_phase(crt, 'RLC_BANDPASS', {'S(1,1)','S(2,1)'}, 'XUnits', 'GHz');
```