

Second order active filter

Table of Contents

Introduction	1
--------------------	---

Copyright (C) 2022 Miodrag Bolic

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version. This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details <<https://www.gnu.org/licenses/>>.

This code was developed by Miodrag Bolic for the book PERVASIVE CARDIAC AND RESPIRATORY MONITORING DEVICES: <https://github.com/Health-Devices/CARDIAC-RESPIRATORY-MONITORING>

```
% Changing the path from main_folder to a particular chapter
main_path=fileparts(which('Main_Content.mlx'));
if ~isempty(main_path)
    %addpath(append(main_path,'/Chapter2'))
    cd (append(main_path,'/Chapter3/RC Circuit and Filters'))
    addpath(append(main_path,'/Service'))
end
SAVE_FLAG=1; % saving the figures in a file
```

Introduction

```
% Exact linearization of the Simulink model filter_80hz
% Specify the model name
model = 'SallenKeyFilter';
```

Specify the analysis I/Os

Get the analysis I/Os from the model

```
io = getlinio(model);
```

Specify the operating point

Use the model initial condition

```
op = operpoint(model);
```

Linearize the model

```
sys = linearize(model,io,op);
```

Plot the resulting linearization

```

h = bodeplot(sys);
setoptions(h,'FreqUnits','Hz','PhaseVisible','on');
hold on
p = bodeoptions('cstprefs');
p.FreqUnits = 'Hz';
p.Grid = 'on';
p.Xlim{1}(1)=10^-1;
p.Xlim{1}(2)=10^3;
p.PhaseWrapping='on';
bodeplot(sys,p)
exportgraphics(gcf,"Fig3.19.jpg", 'Resolution',600)

```

