

# Active Filters

Practical exercise in Analog Electronics

## *Abstract*

*In this lab active filters should be designed and simulated to verify the performance.*

## 1 Active filters

Two different kind of filters should be design and simulated. Chapter 16 “Active Filter Design Techniques” in Mancini, “Op Amps for Everyone” should be used as a guide to complete the design.

The filters should be simulated in the Mindi software that is installed on the computers in the lab. Mindi is free of charge to download from Microchips webpage <http://www.microchip.com/mindi> if you would like to install it on a personal computer.

### 1.1 4<sup>th</sup> order Tschebyscheff High pass filter

Design and verify a 4<sup>th</sup> order Tschebyscheff high pass filter with the following parameters.

- 1dB passband ripple.
- $f_c=10\text{kHz}$
- Unit passband gain

### 1.2 4<sup>th</sup> order bandpass filter

Design a 4<sup>th</sup> order bandpass filter with 20kHz center frequency and 2 kHz bandwidth with a flat gain of 10x or 20dB in the pass-band.

## 2 Documentation

The lab should be documented in word or some other word-processor. All steps in the filter design should be included as well as the circuits and bode diagrams. The report should be submitted by e-mail and the simulation files should also be attached.

Good Luck  
/Kent