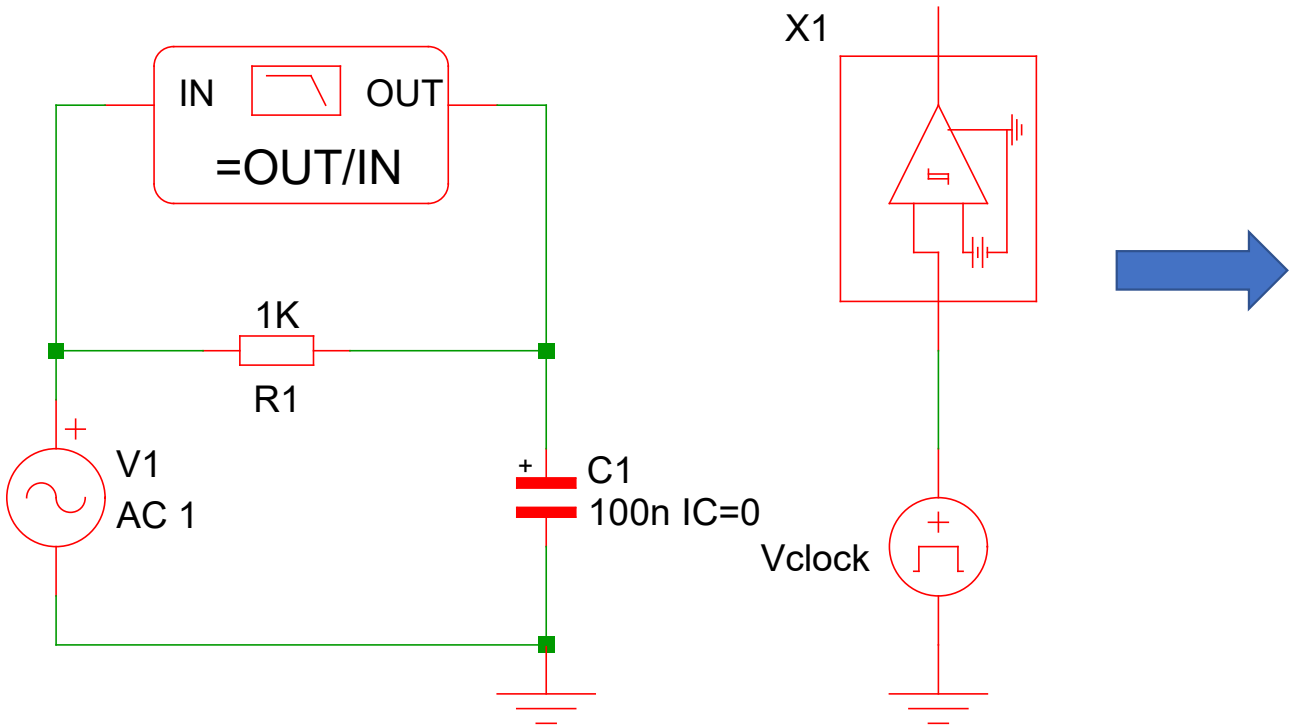
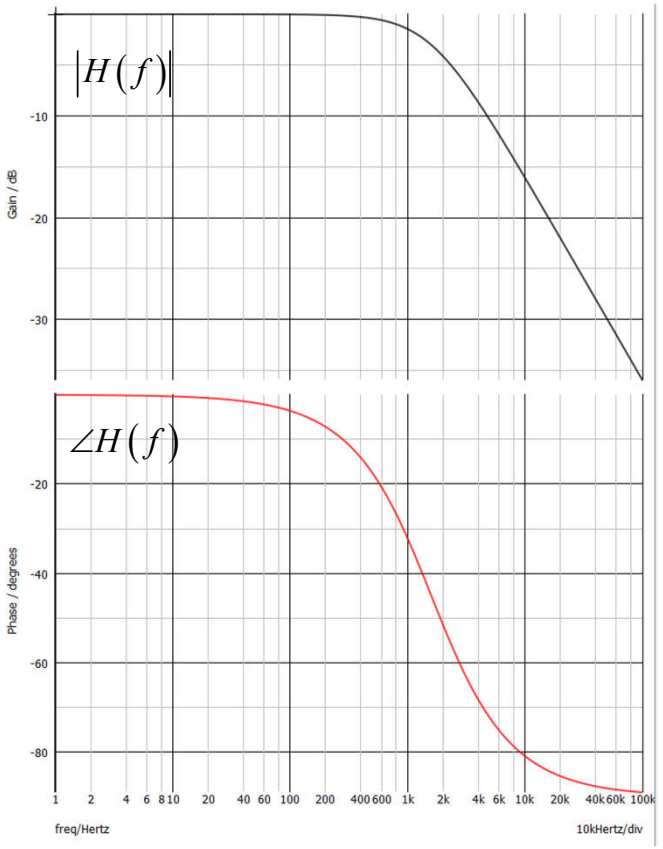
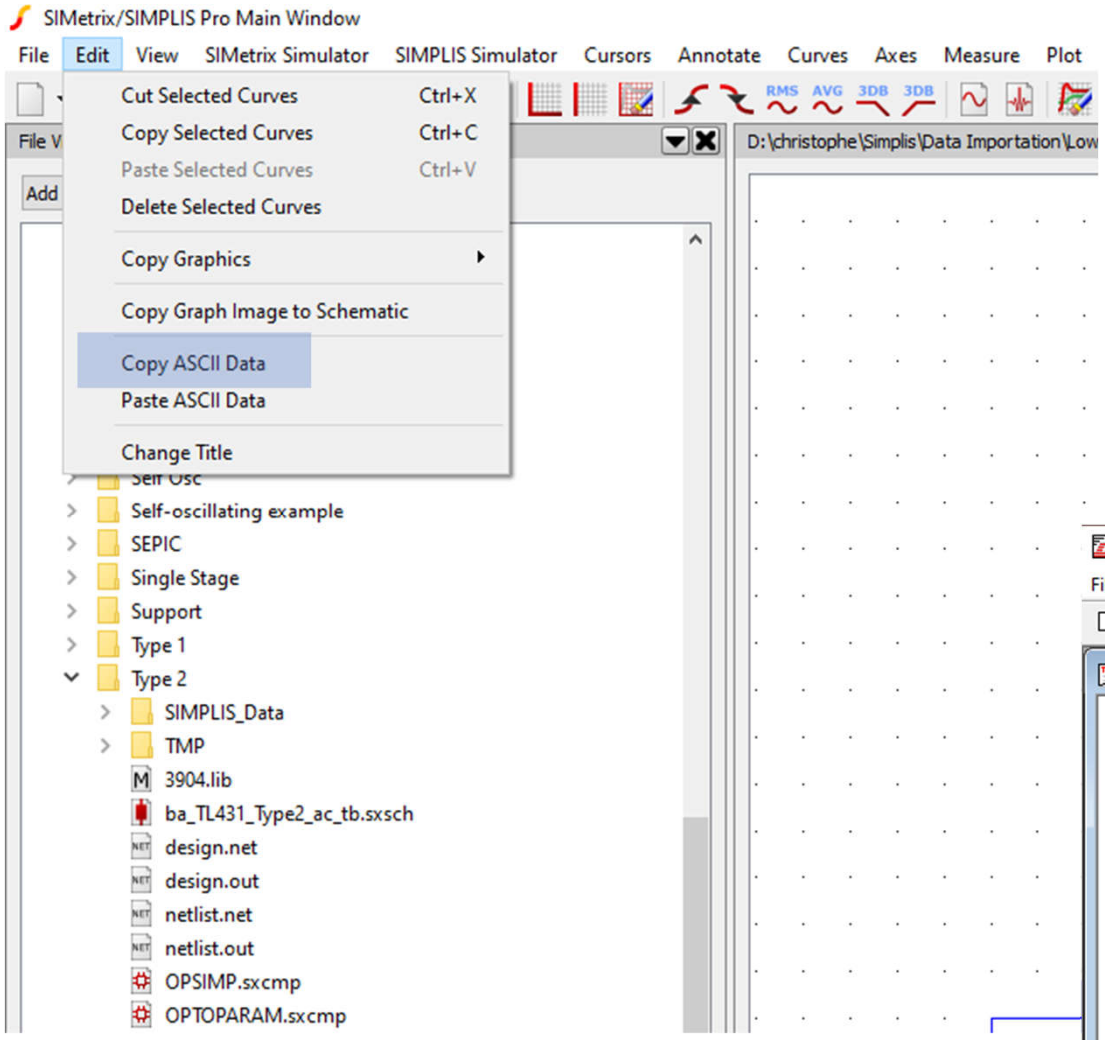
Importing SIMPLIS simulation data into Mathcad

Start with the simple example of a low-pass filter in SIMPLIS: $H(s) = \frac{1}{1 + \frac{s}{\omega_p}}$

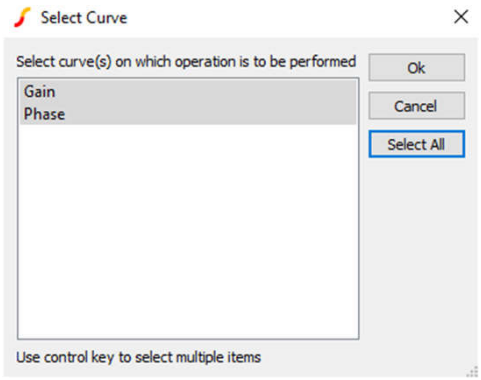




Christophe Basso – November 2020

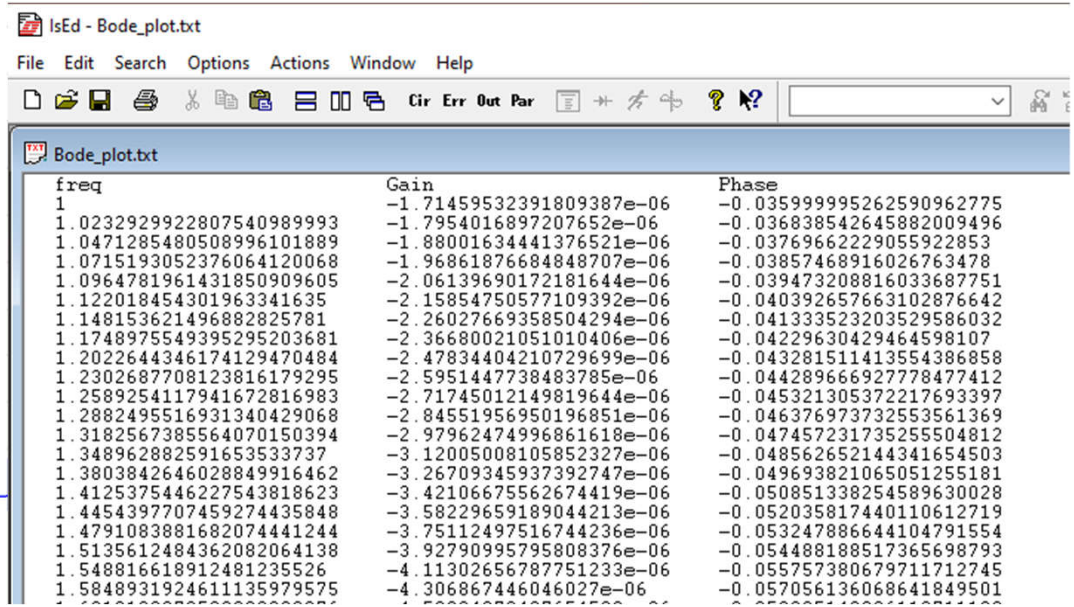


Export magnitude and phase data to a text file



Select both magnitude and phase

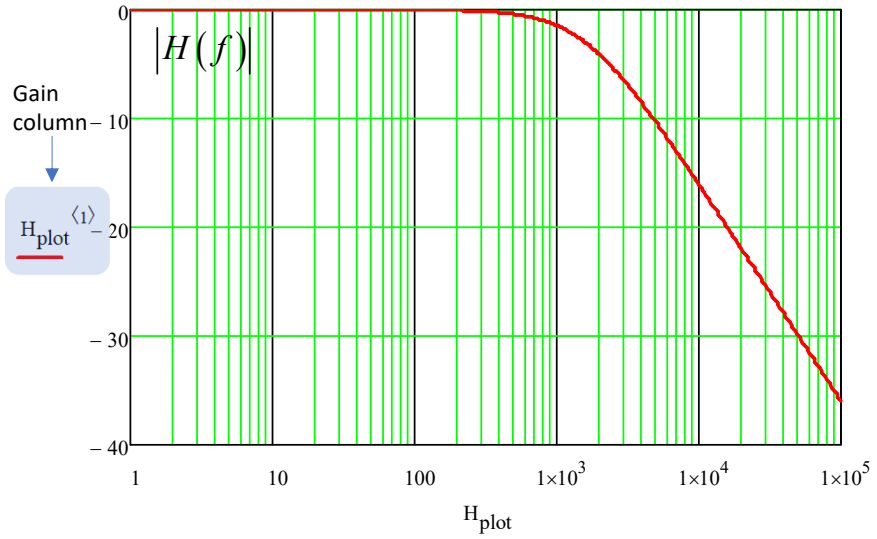
Copy and paste data in a text file: bode_plot.txt

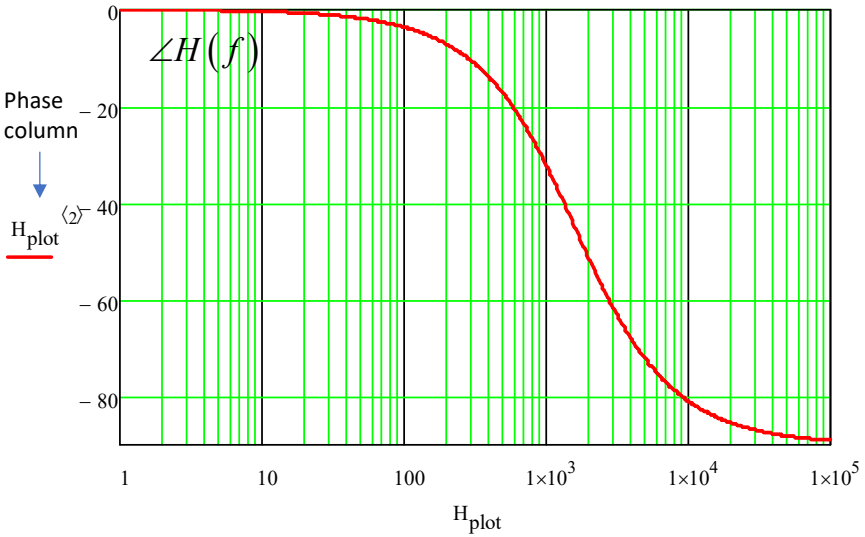


Mathcad array name → $H_{plot}^{\langle 1 \rangle}$ $H_{plot}^{\langle 2 \rangle}$

Assign the array or matrix to H_{plot}, passing the file name located in the same directory as the Mathcad file:

$H_{plot} := READPRN("Bode\_plot.txt")$





The Matrix exponent is obtained either via the floating tool box

or by typing
<CTRL> + 6 on the keyboard (<CTRL> + <Shift> + C in Prime)

$H_{plot}\langle \blacksquare \rangle$

1 is the magnitude column
2 is the phase column

It is now extremely useful to compare simulation and data calculated by Mathcad, e.g. in small-signal modeling

Create a counter variable for log-sweeping ac points as in SPICE. Here, 100 points per decade were selected.

$Start\_Freq := 10^{0}$

$Stop\_Freq := 10^{5}$

$Points\_per\_decade := 100$

$Number\_of\_decades := (\log(Stop\_Freq) - \log(Start\_Freq))$

$Number\_of\_points := Number\_of\_decades \cdot Points\_per\_decade + 1$

$k := 0 .. Number\_of\_points$

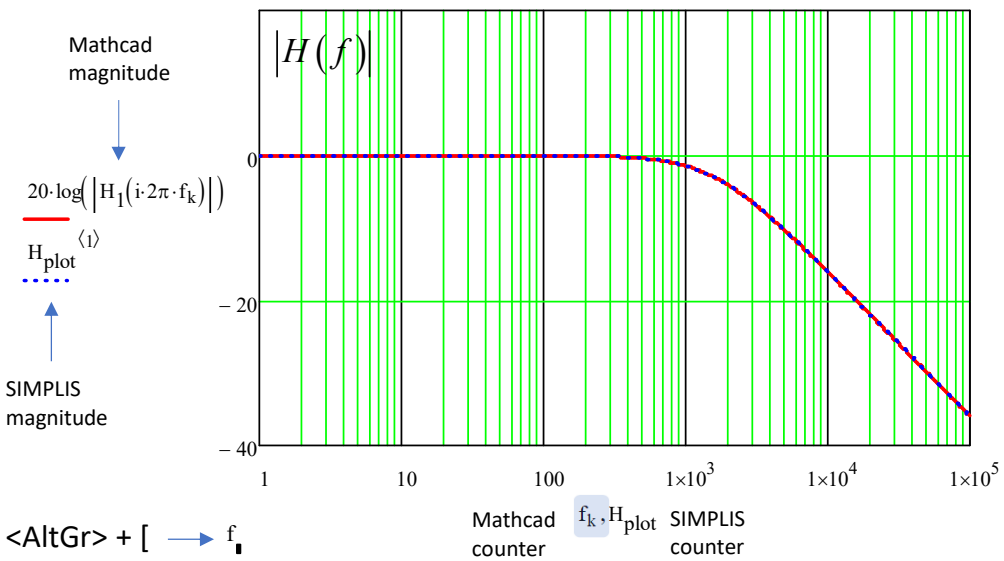
$f_k := 10^{\log(Start\_Freq)+k\cdot\frac{Number\_of\_decades}{Number\_of\_points}} \cdot Hz$

$\omega_k := 2\cdot\pi\cdot f_k$

This is the transfer function in Laplace domain

$\tau_1 := 1k\Omega \cdot 100nF \qquad \omega_p := \frac{1}{\tau_1}$

$H_1(s) := \frac{1}{1+\frac{s}{\omega_p}}$



<AltGr> + [→ f