Assignment 7

1. Generate a signal (as a mixture of sines 10 Hz and 20 Hz and Gaussian noise). Filter this signal using Ricker wavelet (see, scipy.signal.ricker) at 10 and 20 Hz. Plot the original (noisy) and filtered signals, and their amplitude spectrums.

2. Using the code example, “codes/L07_Kalman_in_python_1.py” investigate the impact of 1) process noise and 2) measurement noise on the filter output. Plot the data for different noise levels. Additionally, plot the probability density functions for priors (see *line 101* in the code) after 1 step (i = 1) and after N-1 steps (i = N-1) using norm.pdf() function (see also “codes/L07_gaussian_pdf.py”).

3. Write a report about the tasks (5 pages max) including figures.

Save the report to a file (A07_your_surname.pdf) and upload it together with your Python script (A07_your_surname.py) to the assignment webpage. The *.pdf and *.py files can be zipped and uploaded as a single zip file (A07_your_surname.zip).