

Digital Signal Processing

Lab 2

Frequency zooming by
the FFT

© 2019 T. Erseghe

Today's assignment

Consider (again) the ecg signal available in data_ecg.mat, and sampled @ $F = 125\text{Hz}$

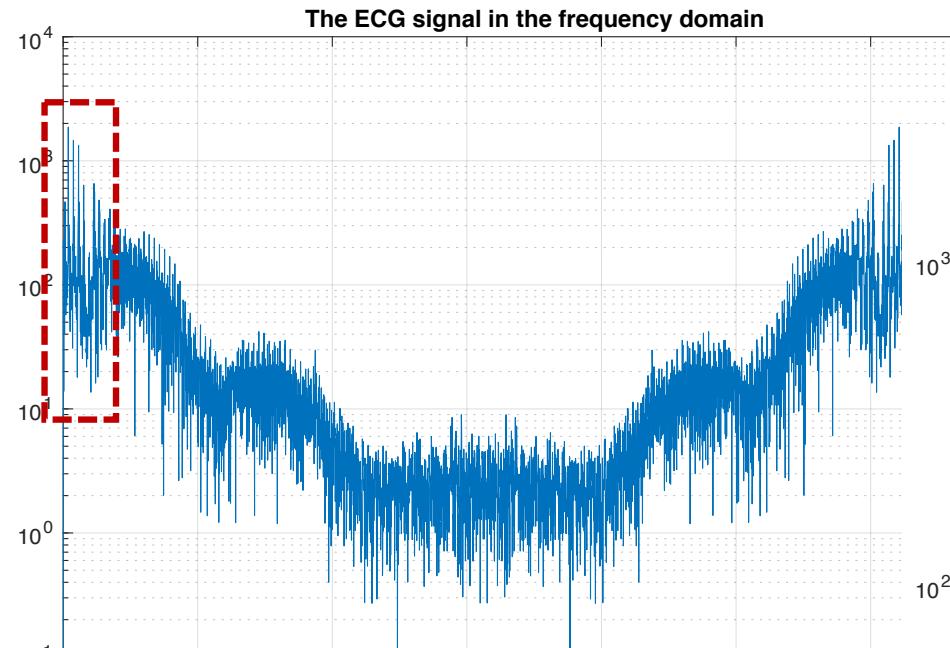
Explore its frequency content by using the:

1. efficient DFT map via fft
 2. zero-padding approach to increase the number of samples in frequency
 3. Bluestein's algorithm to zoom on a specific frequency interval
- solution given for these 2

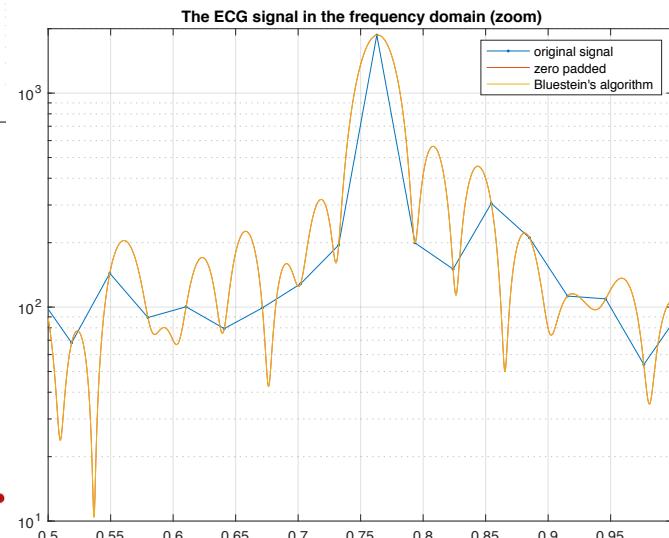
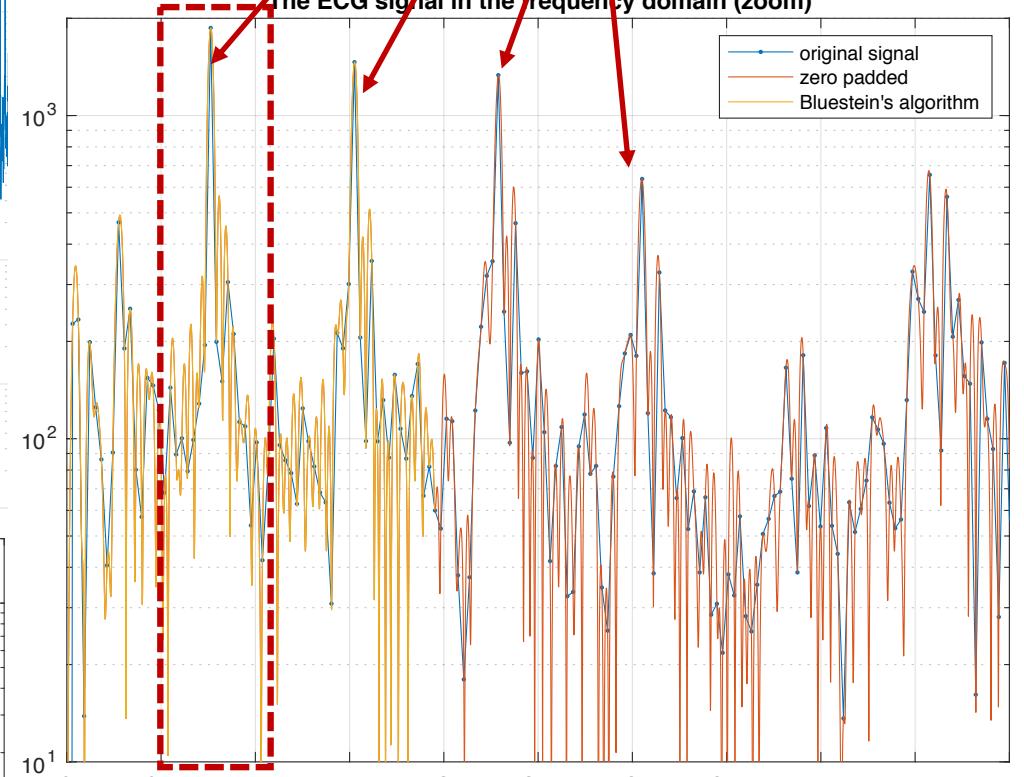
Check that they all give the same result !



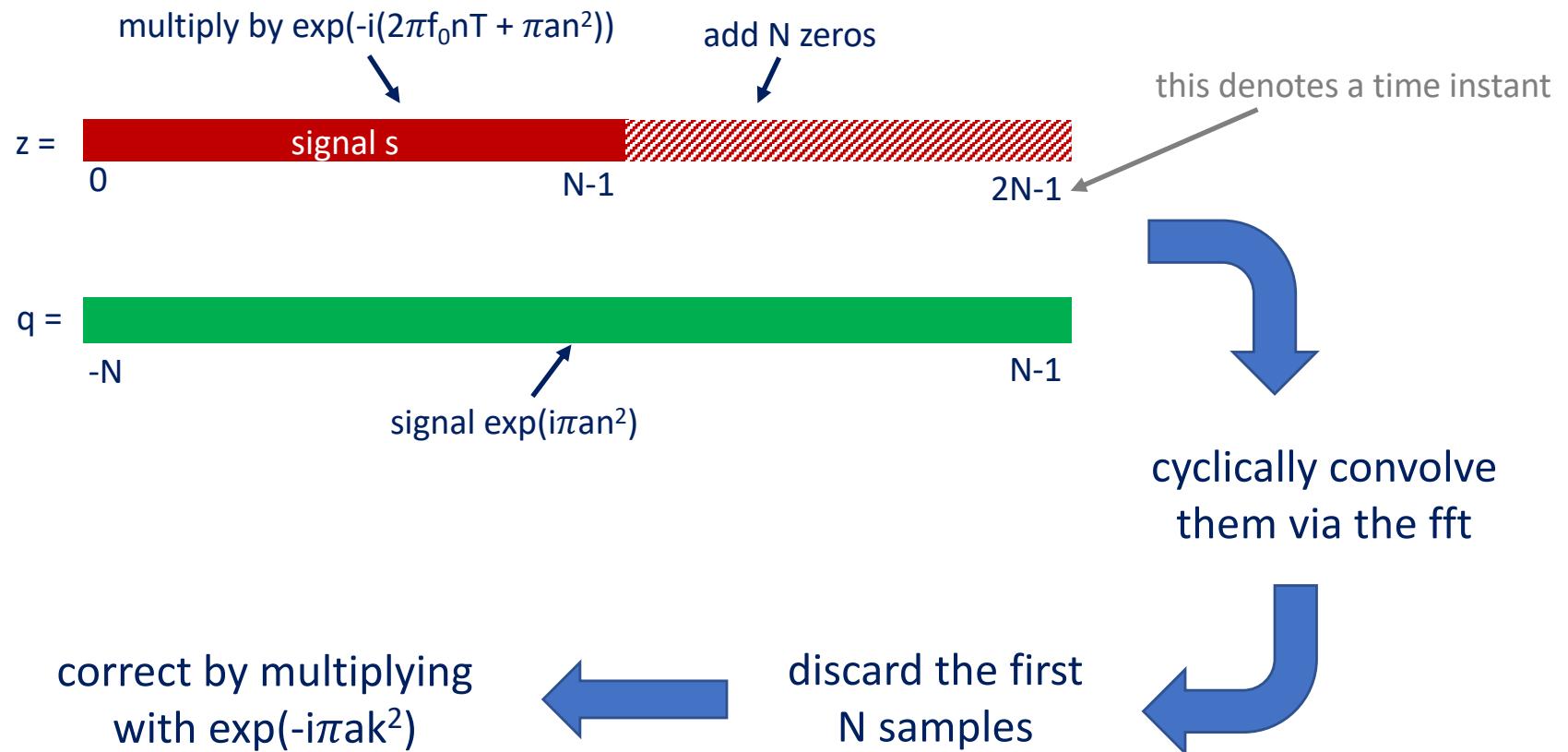
Outcome



peaks linked to the (approximate) periodicity of the ECG signal in the time domain; can be used to estimate the period



Bluestein's FFT



Today's assignment #2

Consider (again) the ecg signal available in
data_ecg.mat, and sampled @ $F = 125\text{Hz}$

Try estimating the (average) period T_p of the ecg signal by exploiting :

1. the information available in the temporal domain
2. the information available in the frequency domain

Do the estimates correspond ?



Questions ?

