

Digital Signal Processing

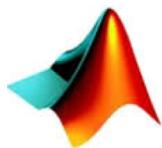
Lab 1

Block convolution

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MatLab licence for students

MATLAB = MATrix LABoratory by MathWorks

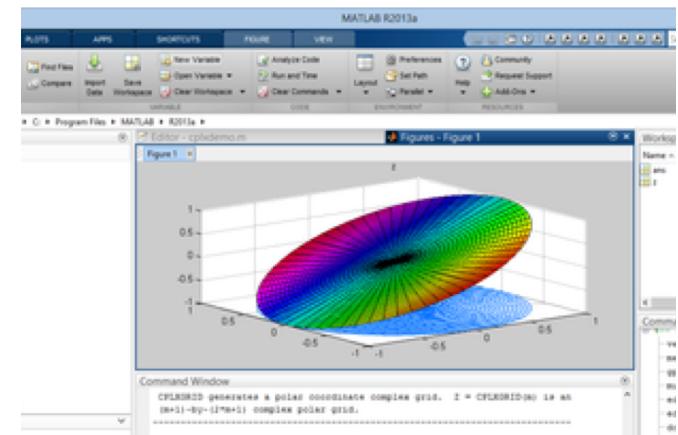


MATLAB “is a numerical computer environment which allows matrix manipulations, plotting of functions and data, implementation of algorithms” [wiki]

Total Academic Headcount
Campus & Student

You can freely install (and run) MATLAB in your laptop

[https://www.ict.unipd.it/servizi/servizi-utenti-
istituzionali/contratti-software-e-licenze/matlab](https://www.ict.unipd.it/servizi/servizi-utenti-istituzionali/contratti-software-e-licenze/matlab)



Today's assignment

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

Convolve it with the given exponential filter by
using the:

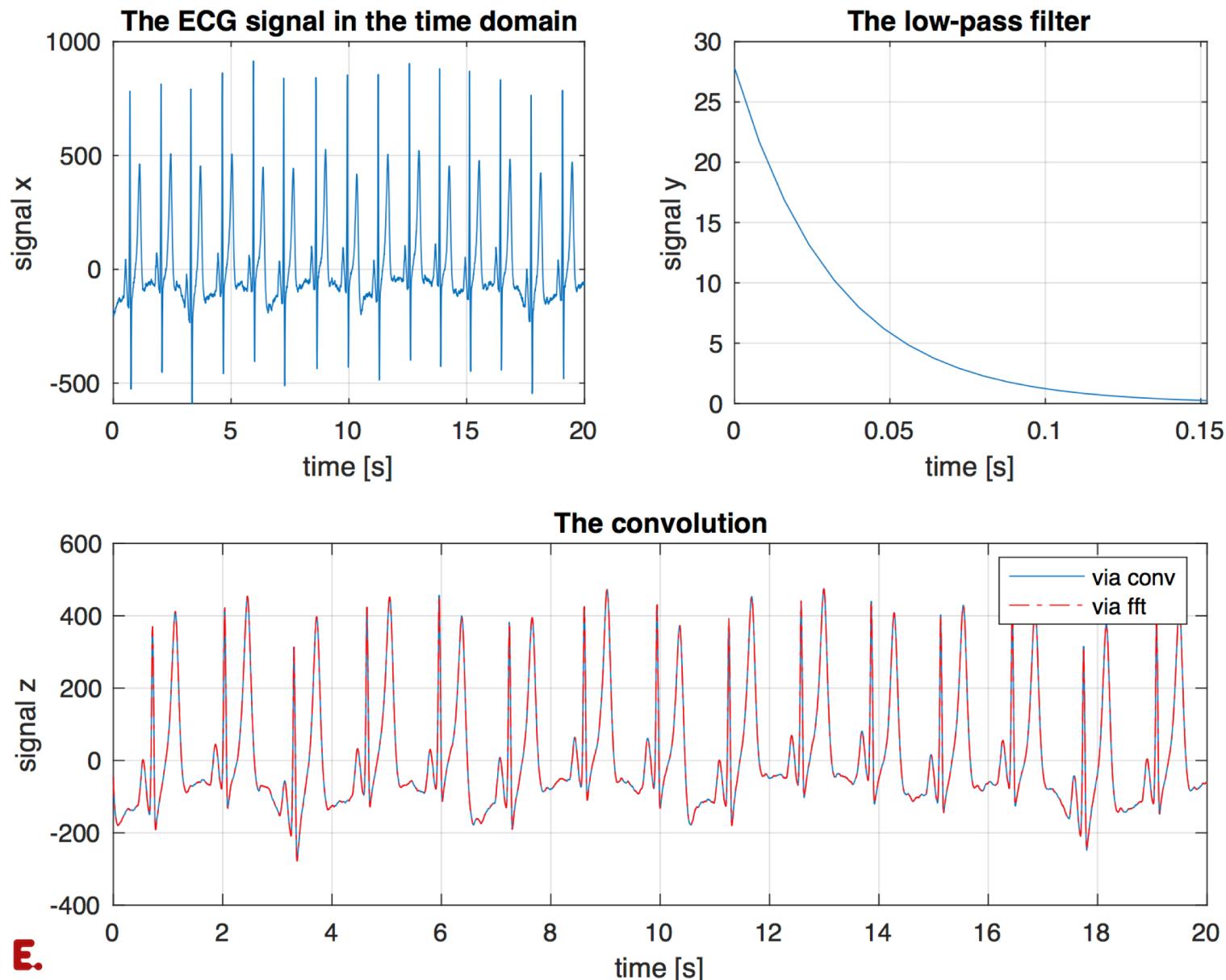
1. discrete-time convolution (conv)
2. discrete Fourier transform (fft)
3. overlap-and-add (via fft)
4. overlap-and-save (via fft)

solution given for these 2

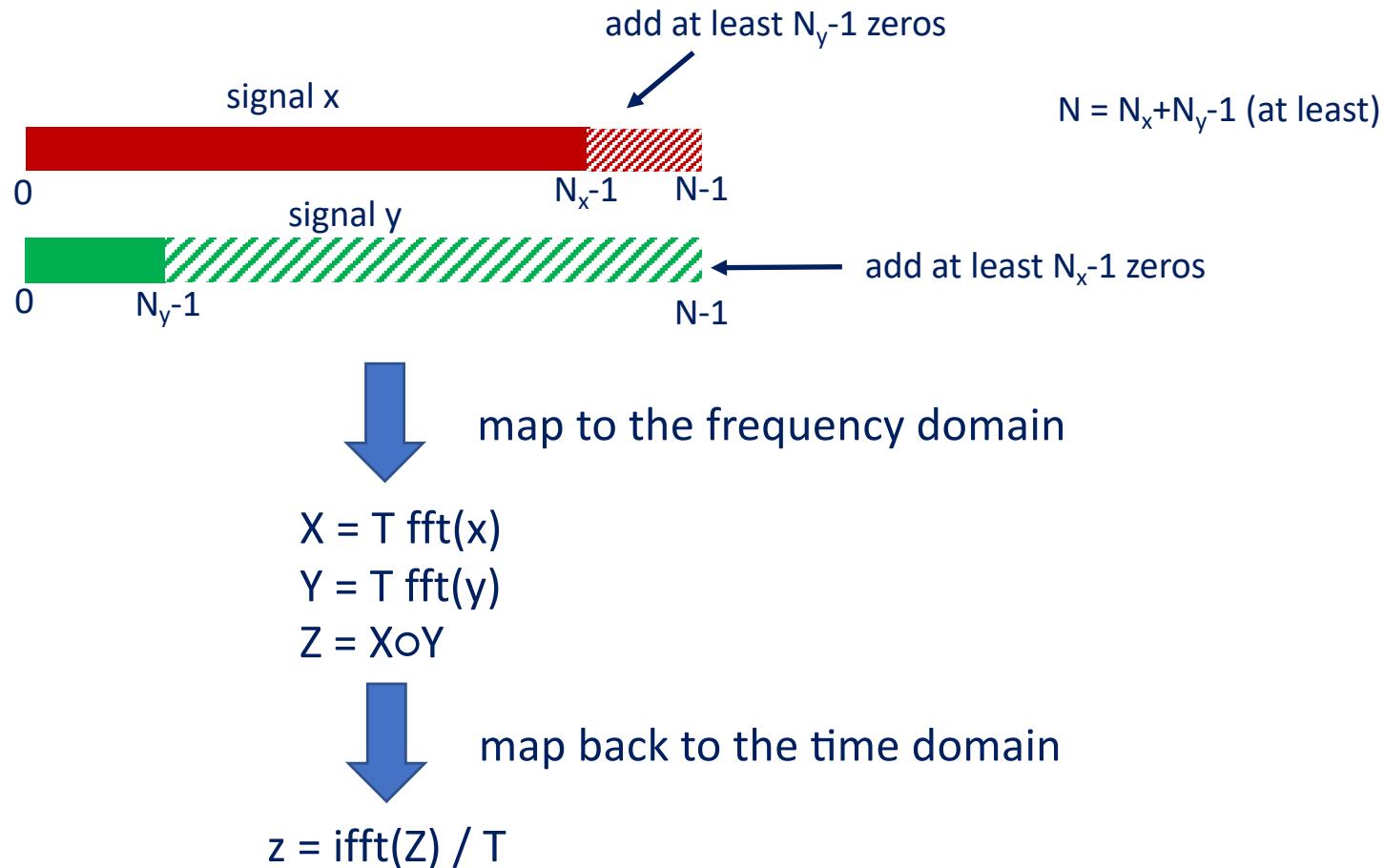
Check that they all give the same result !



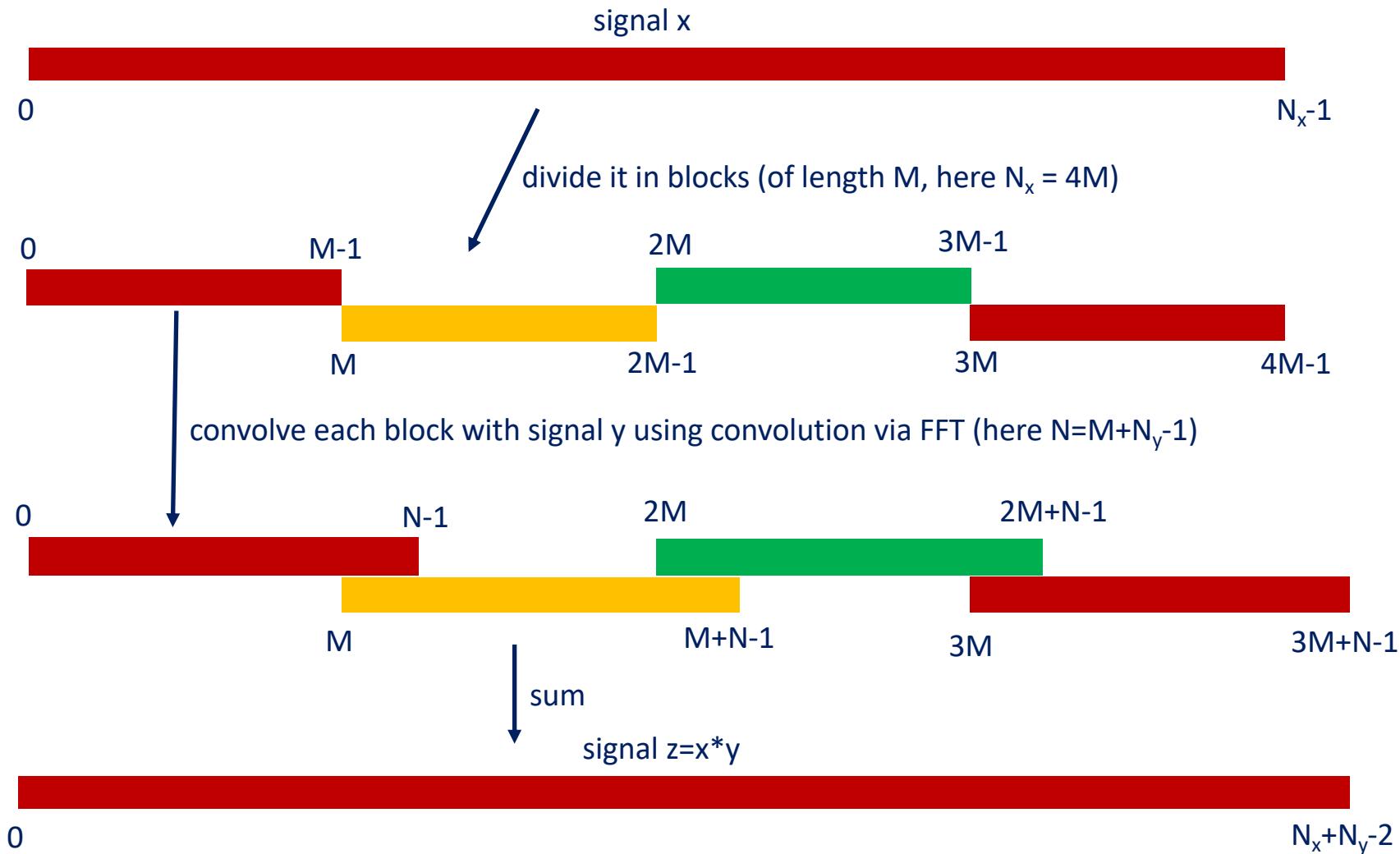
Outcome



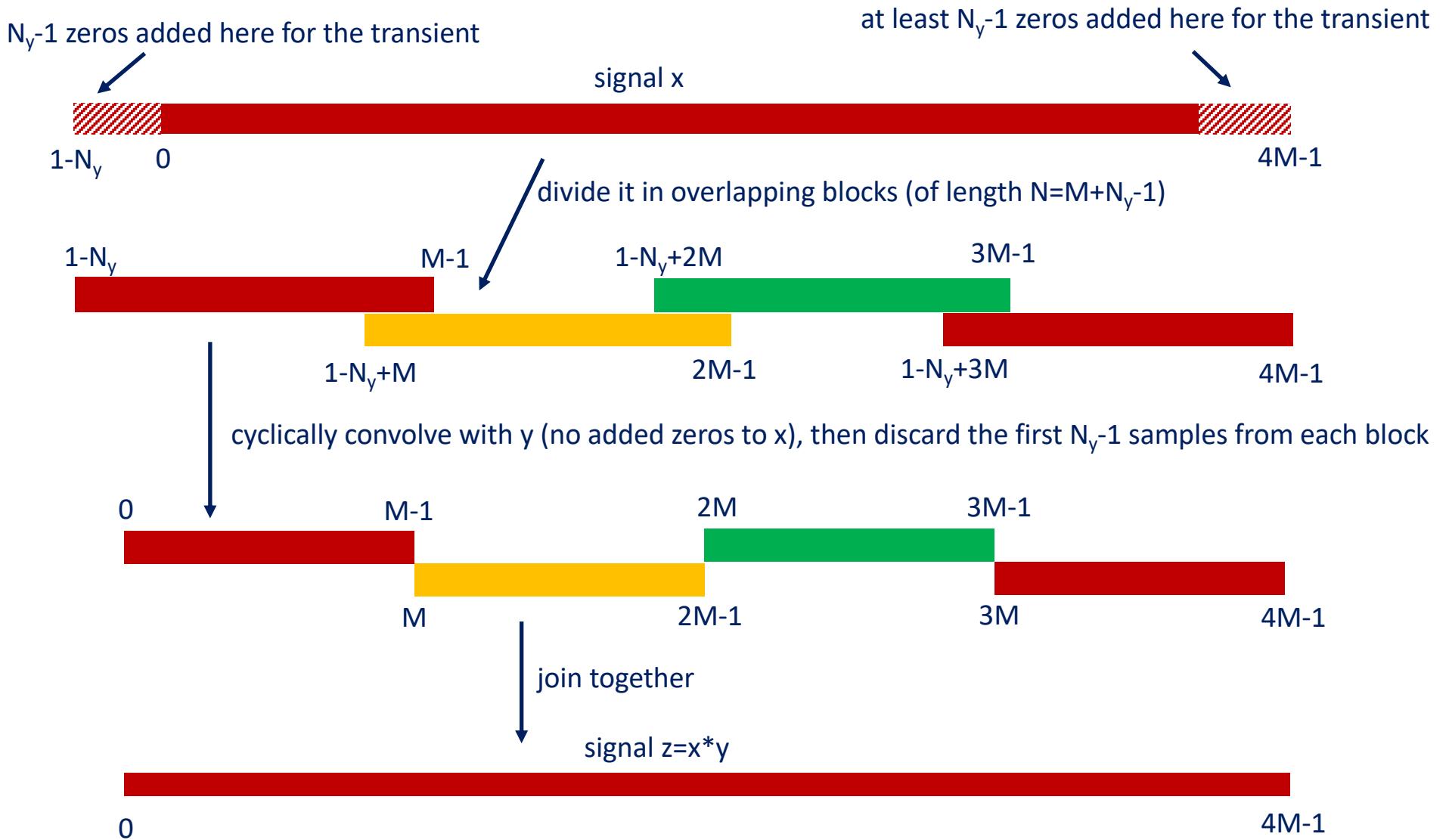
Convolution via FFT



Overlap & add



Overlap & save



Questions ?

