Dear Students!

I promised to write a bit more in details about what you are assigned to do as homework 1:

So you can find a zip package at the page:
http://cneuro.rmki.kfki.hu/education

The link Data series and Scilab scripts for practices contains the PRACTICE.zip file.
If you download and unzip it you will find one large data file named Seizure1.mat and several small scrips, all written is Scilab.

In Scilab you can load the mat file with loadmatfile command, you can find an example of such a command in the CorrProj1.m file.

The Seizure1.mat file contains a large matrix of 226304*43. It contains subdural ECoG recordings on 43 channel, measured by an implanted electrode grid from the surface of the brain of an epileptic patient during pre-surgical investigation.

The recordings were done with 1000Hz sampling rate, so the total length of the recording is 226s.

So first visualize the data an look for the seizure, somewhere in the middle of the recording. Better to show it different ways, which enables to determine the occurrence of the seizure both in time and in space (which are the active channels?).

Then, compare the spectrum of the seizure to the spectrum of the ECoG, before the seizure! Which are the typical frequencies of the epileptic seizure?

To investigate the time-evolution of the seizure you can apply wavelet transformation (preferably complex wavelet), and show the absolute value of the complex valued coefficients. Please describe what kind of changes you observe in the spectrum, during the seizure!

Based on these observations what is your guess on the location of the seizure onset zone, which channel(s) start(s) the seizure?

Please send me the reports due to March 12 (somogyvari.zoltan@wigner.hu or somogyvari.zf@gmail.com), and write to me if you have any further questions.

I hope all of you are in a good health!

Best regards!

Zoltán