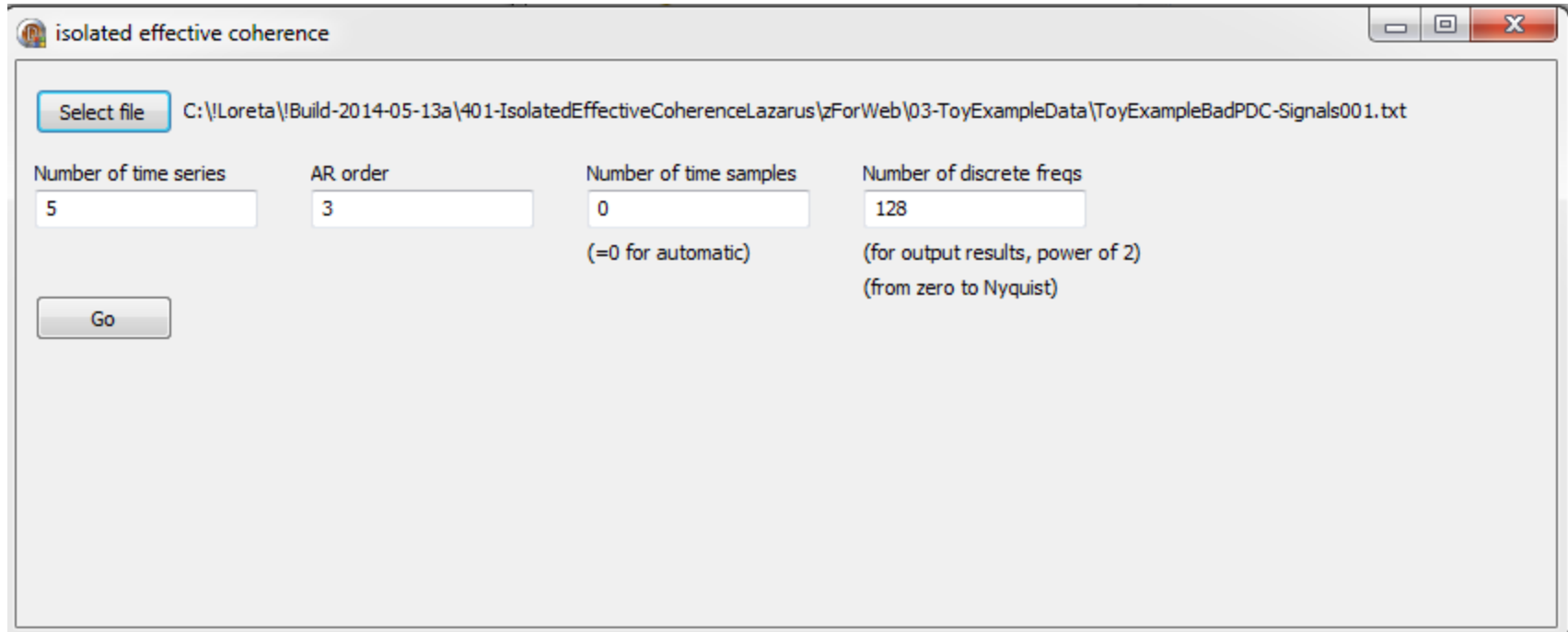


The file “2013-11-07-IsolatedEffCoh-20140513-errataFixed.pdf” is the technical report (pre-print) with the new method:

iCoh: isolated effective coherence

...\01-iCohExecutableWin\p_iCoh1.exe : this is the program (executable for windows) that computes iCoh and the generalized partial directed coherence (gPDC) of Baccala and Sameshima



The screenshot shows a Windows application window titled "isolated effective coherence". The window contains a "Select file" button and a text field displaying the file path: "C:\Loreta\!Build-2014-05-13a\401-IsolatedEffectiveCoherenceLazarus\zForWeb\03-ToyExampleData\ToyExampleBadPDC-Signals001.txt". Below this, there are four input fields for parameters: "Number of time series" (value: 5), "AR order" (value: 3), "Number of time samples" (value: 0, with a note "(=0 for automatic)"), and "Number of discrete freqs" (value: 128, with a note "(for output results, power of 2) (from zero to Nyquist)"). A "Go" button is located at the bottom left of the parameter section.

Parameter	Value	Notes
Number of time series	5	
AR order	3	
Number of time samples	0	(=0 for automatic)
Number of discrete freqs	128	(for output results, power of 2) (from zero to Nyquist)

This is an example RUN with the example data included here

...\02-iCohLazarusDelpiPascalCode : this folder contains all the pascal code for iCoh and gPDC.

This was compiled using lazarus free-pascal “www.lazarus.freepascal.org”

...\03-ToyExampleData\ToyExampleBadPDC-Signals001.txt :
 This is test data, toy example. This is explained in detail in the ARXIV paper (toy example 9.2 therein).
 It is a simple text file, numbers separated by space. 25600 rows (time samples), 5 columns (number of time series).

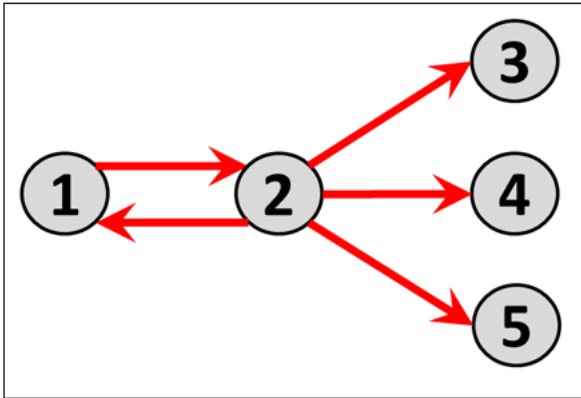


Figure 5: Toy Example 9.2. Schematic representation of the direct wiring among 5 nodes.

Table 2 shows the time domain auto-regressive parameters for Toy Example 9.2.

A(1) =	1.5	-0.25	0	0	0
	-0.2	1.8	0	0	0
	0	0.9	1.65	0	0
	0	0.9	0	1.65	0
	0	0.9	0	0	1.65
A(2) =	-0.95	0	0	0	0
	0	-0.96	0	0	0
	0	-0.8	-0.95	0	0
	0	-0.8	0	-0.95	0
	0	-0.8	0	0	-0.95
<i>diagonal</i> S_ε =	1	1	1	1	1

...\04-iCoh&gPDCresults : this folder contains results for estimated iCoh and gPDC from the toy example.

The files within are:

ToyExampleBadPDC-Signals001-gPDC.txt: **gPDC**

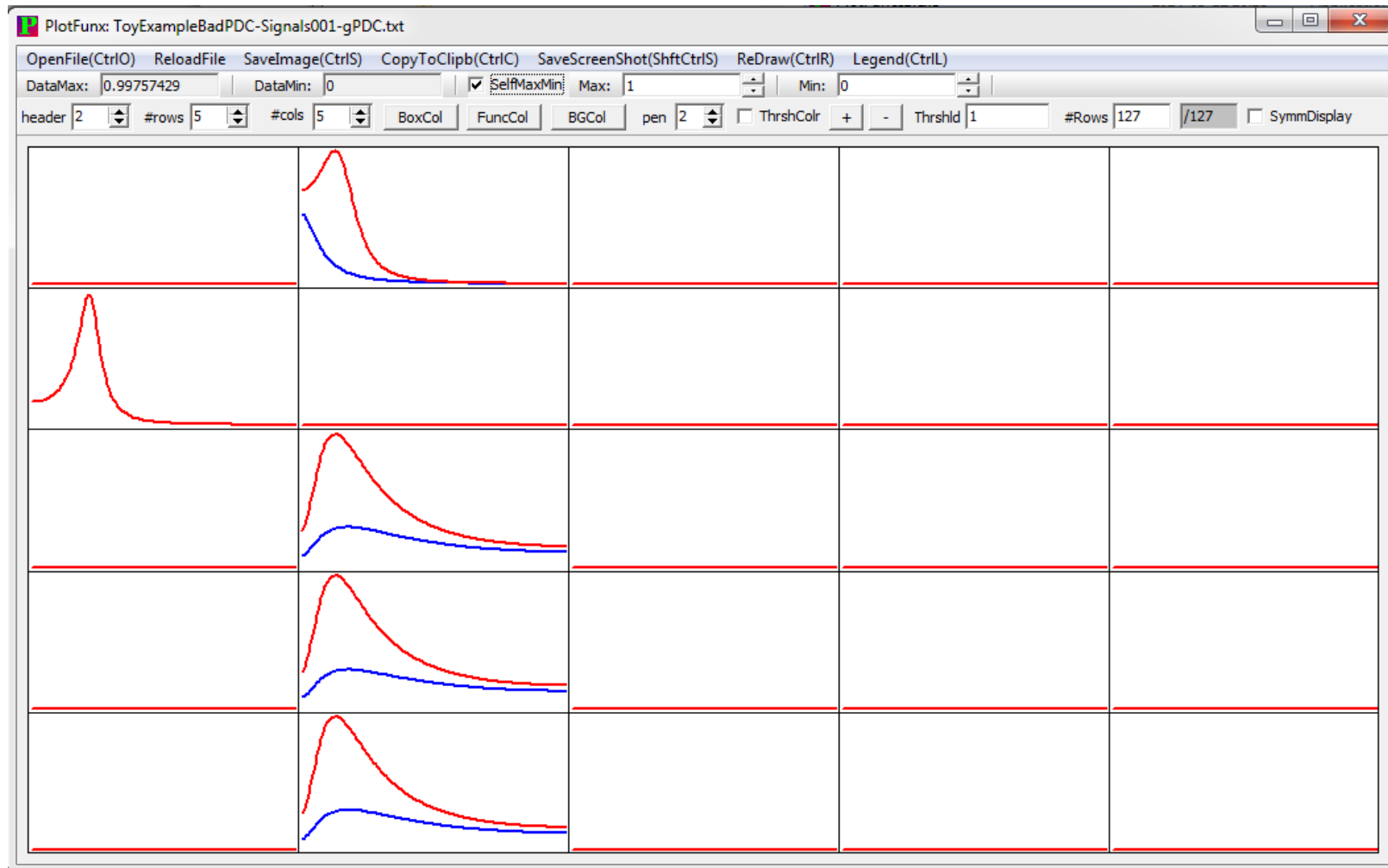
ToyExampleBadPDC-Signals001-iCoh.txt: **iCoh**

ToyExampleBadPDC-Signals001-Noisevar-ARcoeff.txt: **The innovations covariance, followed by the estimated AR coefficients up to order 3 (in this example)**

The TEXT files with gPDC and iCoh consist of 25 columns and 128 rows:

The first row is a header line, with 25 column names clearly indicating SENDER → RECEIVER
This is followed by 128 rows, with the connectivities at discrete frequencies 0 to 127 (from DC up to the Nyquist frequency minus 1). For example, if the data was sampled at 256 Hz, then the 128 rows correspond exactly to the range 0 to 127 Hz.

...\05-PlotFuncViewerExecutableWin\PlotFuncs1.exe : this is the program (executable for windows) displays the connectivity files produced by the iCoh program. For instance, if you open both files “ToyExampleBadPDC-Signals001-gPDC.txt” and “ToyExampleBadPDC-Signals001-iCoh.txt”, you will see:



where RED=iCoh and BLUE=gPDC.

iCoh gives correct results. gPDC gives incorrect results in two fundamental aspects: Incorrect information on the frequencies that are transmitted, and incorrect low values in general for the connectivity strength.

