

“Camadia” acquisition software how to (and first aid kit)

1. Overview of the system

On the Camadia control desk there are 3 monitors: 'Mac8' on the left, 'Mac35' in the center and 'Mac12' on the right (the big, fancy one!). Camadia is spread over this monitors, and on other PC that can be controlled from them. Let's have a look at the current organization:

--- **Mac8 (left)**: this can be considered as the 'main Mac', as it's from here that all the more important programs are run. The typical Mac8 screen looks something like this:

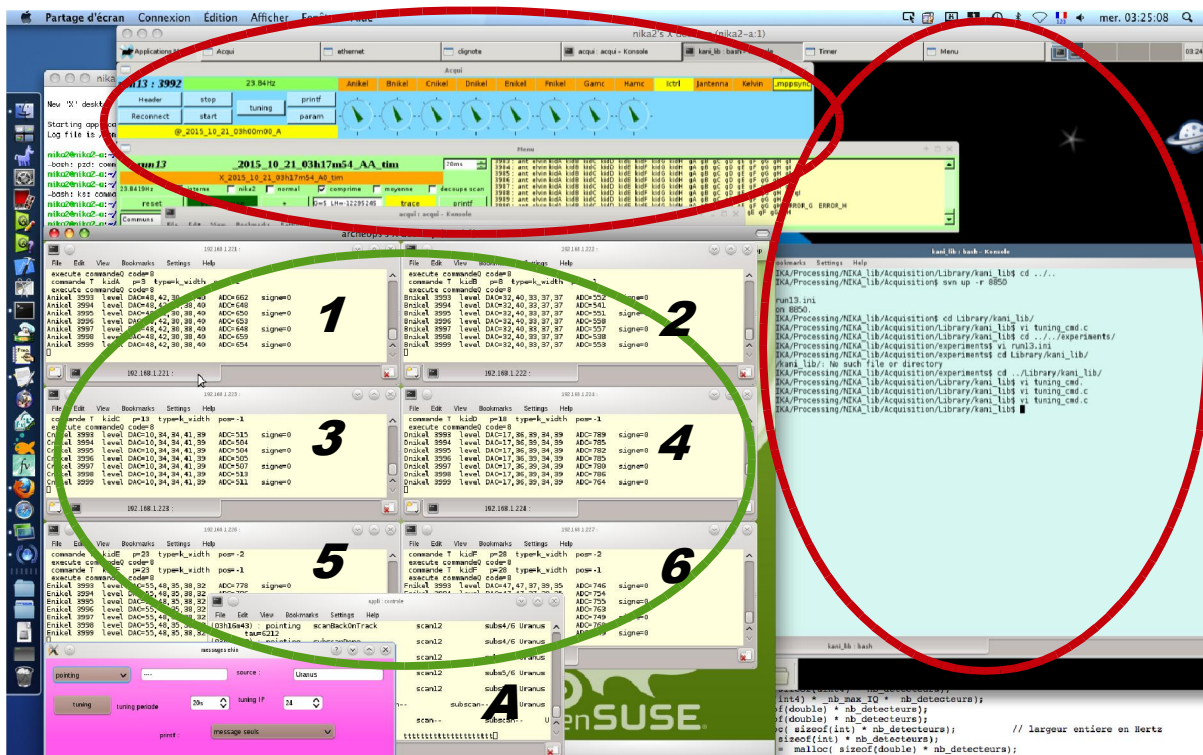


Fig. 1: Typical screen of Mac8. Note that it is possible that not all the windows you see here will be open when you start.

So actually, the Mac8 is used to get access to other 2 machines: the **PC nika2-a** in the **red** circles (NOTE: if no programs are running the screen will be basically completely black and empty), and **PC sami** in the **green** circle, where there should always be some shells open (or 'terminals', depending on how you use to call them!).

PC nika2-a is the one where the '**acqui**' application is run. This is the core of the Camadia software and it is the one communicating with all the instruments, gathering data, and dispatching them to the other applications, in particular '**lecture**', that can basically be seen as a 'client' that listens to the data taken by acqui.

PC sami is used to launch the Nikel electronics boards: the 6 shells numbered 1 to 6 in the image above correspond each one to a shell connected to one Nikel board. Plus, a seventh shell is used to launch the '**controle**' application (letter A).

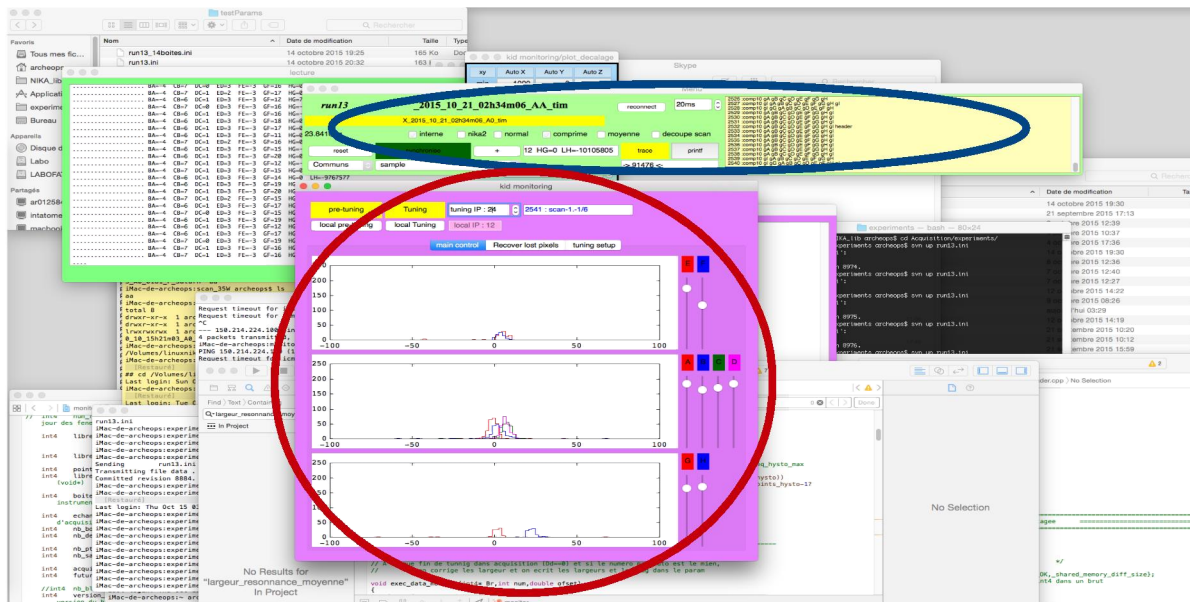


Fig. 2: Typical screen of Mac12

Mac12 (right): this is the second most important machine. On this, we run a 'lecture' client (blue circle), to be able to listen to the data, plus the application 'monitor' (red circle), which allows to get a rapid impression of the sanity of the system, as well as allowing the recovery of the resonators if they are lost. The 'monitor' program shows a series of histograms which, when the system is tuning correctly, should be almost a 'delta' at the center of the graph. **NOTE:** during long scans (eg, OTF geometries), the delta might actually shift and spread around, because tuning are suppressed during this scans to avoid having problems later in the data analysis. This is the case of the screen capture shown above. But at the end of the scans, they should come back to a delta-like shape..

--- **Mac35 (center):** here typically there is a copy of 'lecture' running, plus the program 'trace' (blue circles), with which one can plot the various variables to make sanity checks (eg: look at the time traces of the kids as a function of time or similar things).

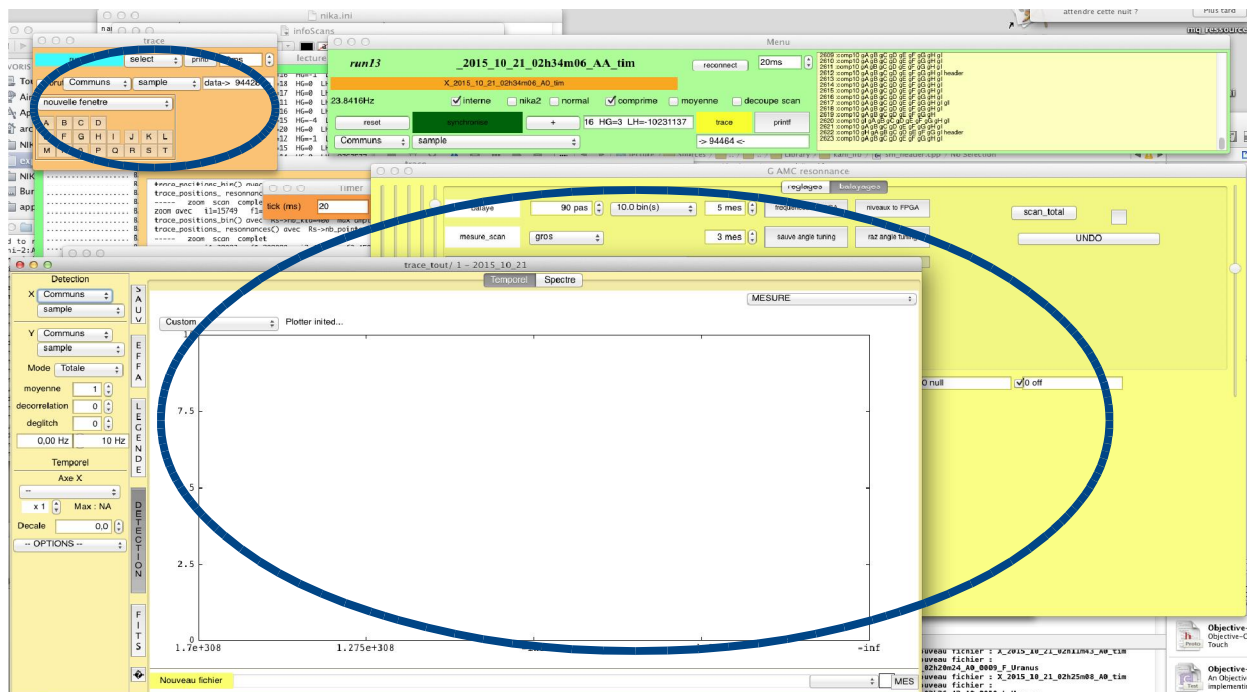


Fig. 3: Typical Mac35 screen

2. Launching the Camadia software

Let's imagine that no programs are running and you have to start observing. Here is what to do (which, as you will see, is actually very similar to the 'emergency solution' to apply when there are major problems..!). Note that I am assuming that the electronics boards are running fine: it should be the case, they don't give problems very often. To be sure, check in the 6 shells of the PC sami connected to the Nikel boards (numbered 1-6 in Fig. 1) that the numbers keep increasing. If they are not, see in section 5 what to do if the Nikel are not responding, then proceed. Otherwise, go on now!

NOTE: if there are still some programs running on some of the Mac, and especially on the nika2 window in Mac8, and this is complicating your life when starting your session, do not hesitate and kill all the running programs (find all the different shells/terminals and click 'ctrl-c' in them to terminate the program that was launched from it). Then, proceed as follow.

--- Launching acqui

On the nika2-a window:

1) Open a series of shells (4 in total are necessary)

2) In the first one, type:

"cd /home/nika2/NIKA/Processing/NIKA_lib/Acquisition/appli" then "./antenna.sh". When asked for a password, just click "ctrl+c" (and keep making ctrl+c if it asks for the password again until the program launches). Check, when the program starts, that it is listening on port 63405 (it will print it on the shell, see figure A.1 at the end of the manual). If not, stop it by "ctrl-c", wait a while (the port might be still occupied due to a previously running version of the program), then try relaunching it until you get the right port. Typically, waiting 10/15 seconds is ok.

3) In the second shell do:

"cd /home/nika2/NIKA/Processing/NIKA_lib/Acquisition/appli" then "./elvin.sh"

4) In the third:

"cd /home/nika2/NIKA/Processing/NIKA_lib/Acquisition/kani/acqui" then run "./acqui". **NOTE:** this is NOT the same folder as the ones above. DO NOT use the version of 'acqui' program that is present in the 'appli' dir or the tuning will not work.

A blue rectangular window will open. This is what I'll call the '**acqui window**'. It will look something like this:



Fig. 4: the 'acqui' window

Then go to the sami window:

If the controle program is already running (a pink window is open, see Fig.5 in next page), kill the old instance of it: click on the controle shell (Fig.1, letter A), make "ctrl-c" to kill it, and then relaunch it typing "./controle". You won't see the pink window opening up yet! That's normal!

If it is not running already, in the shell dedicated to the 'controle' program (see figure 1) do:

"cd /home/archeops/NIKA/Processing/NIKA_lib/Acquisition/appli" then "./controle". It should say something like 'en attente de block sur le port 55560 bla bla bla'. Ok!

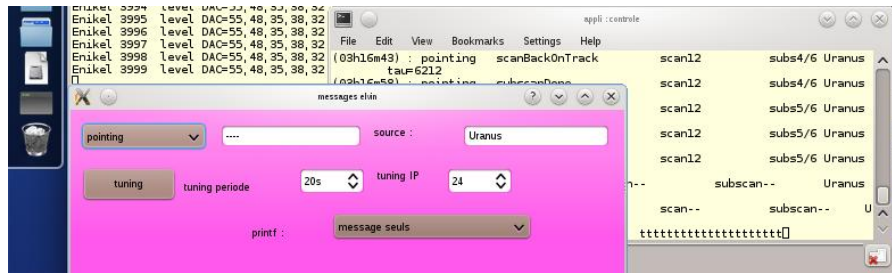


Fig. 5: Controle program running (pink window) and controle shell on the back

Then **go back to the nika2-a window**:

On the blue 'acqui window', click on the 'header' button. 'Controle' will open a pink window. To be sure that everything is fine, check, on the shell where you launched the 'acqui' program, that it says something like:

ctrl reconnecte TCP ip = 192.168.1.32 port 2303 connection ok

(see figure A.2 at end of manual). NOTE: when you do this, quite a few lines might be printed on the shell. In this case, scroll backwards until you find the part you are interested in (again, see fig A.2 to have an idea), and check that on the '**ctrl**' line the connection went ok as written above. Then scroll back to the bottom of the 'acqui' shell. And, NOTE NUMBER 2: **only** consider the line dedicated to '**ctrl**', there might be other lines giving errors (eg, 'mppsyc'): just ignore them!

If, on the opposite, the 'ctrl' line says 'ERROR' (figure A.3), then repeat the following steps:

-On nika2-a kill the controle program with ctrl-c in the controle shell.

-Relaunch with ./controle

-Reclick on the 'header' button in the 'acqui' window. Check that the connection was ok this time.

This must be repeated until a valid connection is obtained.

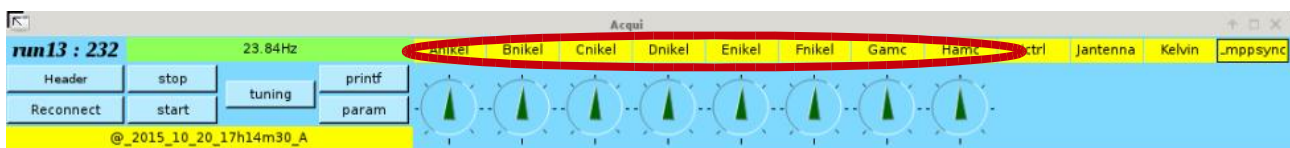


Fig. 6: details of the acqui window (not the acqui shell, mind the difference!)

Once this is done:

Check that on the acqui shell (not window!) everything is more or less static. To do this scroll to the bottom of it and see that there are not plenty of lines passing by. Some infos might be written but not a continuous flux of them. If a minute has passed since you launched the 'acqui' application, you are sure that it's already ok! Then, on the acqui blue window, click on 'stop'. Wait about 5 seconds. Click on 'start'. All the indicators of the electronic boards ('nikel' and 'amc', red circle in the image below) should start to blink synchronously. Furthermore, the indicators of 'elvin', 'antenna' and 'controle' (just on the right of such circle) should also be blinking, but on a more irregular basis. If so, then... **Great, acqui is running fine!**

--- Launching lecture

On Mac8: in the fourth shell that you opened in the nika2-a window, make:

"cd /home/nika2/NIKA/Processing/NIKA_lib/Acquisition/appli" then "./lecture"

A green rectangular window will open. This is the **lecture window**. NOTE: if the program is already running, it is safer to find the shell from which it was launched, kill it making 'ctrl-c', and relaunch it with "./lecture".

The following options should have a tick: 'interne' (=save data on local HD) and 'comprime' (see the small circles in the image below). And, on the yellow part of the window, you should see a series of numbered lines passing by. **Note:** the other instances of lecture running on other Mac depend on this

one, so if this one gets blocked, also lecture on all other Mac gets blocked...

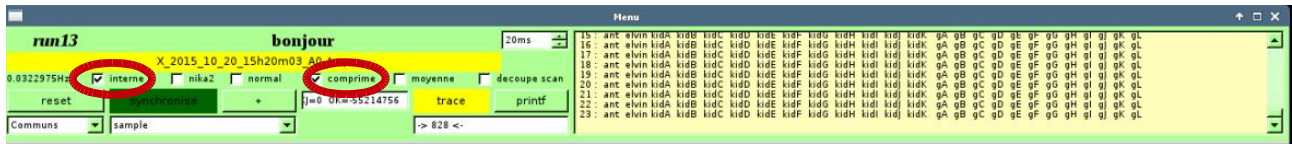


Fig. 7: the lecture window

When launching lecture, it sometimes causes the VNC connection to nika2-a to fail. In this case, you've been very unlucky: see in section 5 how to re-establish a VNC connection to nika2-a, then restart the whole process from scratch! Yes, that's painful...

On Mac35 and Mac12: if the lecture green window is already there (ie, the program is actually already running), just click 'reconnect' to re-establish the connection of the lecture client to the acqui server. The numbers in the yellow part should re-start to increase. If they don't, click on the Xcode icon (on the left of the screen, with a little hammer on it). Then in the menu at the top of the screen click on 'window-->lecture'. Click on the 'stop' button of the window that opens, then click again this time on 'play'. Lecture should start. **Note:** is it still doesn't, it's probably because the 'lecture' of Mac8, from which the othe ones depend, is not running; so go to Mac8, relaunch lecture there, and retry on the Mac12 and/or Mac35.

If, on the other hand, lecture is not yet running do the following:

- 1) Open Xcode (the icon with the hammer on the left of the screen)
- 2) Go to 'file → Open recent...' and look for 'lecture.xcodeprj'. Click on it.
- 3) Click on the 'play' button on the top left corner of the window that has opened.

Ok, lecture is running. On the copies of lecture that run on Mac12 and Mac35, the options 'interne' (=save data on local HD), 'nika2' (=save data on nika2 machine) and 'comprime' should be ticked.

--- Launching monitor

This program should run only on Mac12. So:

On Mac12:

- 1) Check that on Mac12 lecture is running and well connected.
- 2) Open Xcode (the icon with the hammer on the left of the screen)
- 3) Go to 'file → Open recent...' and look for 'monitor.xcodeprj'. Click on it. If it asks whether to stop the running instance, answer yes.
- 4) Click on the 'play' button on the top left corner of the window that has opened.

A pink window will open. For the time being, set the 'tuning IP' to 0 on the top part of the window (red circle below).

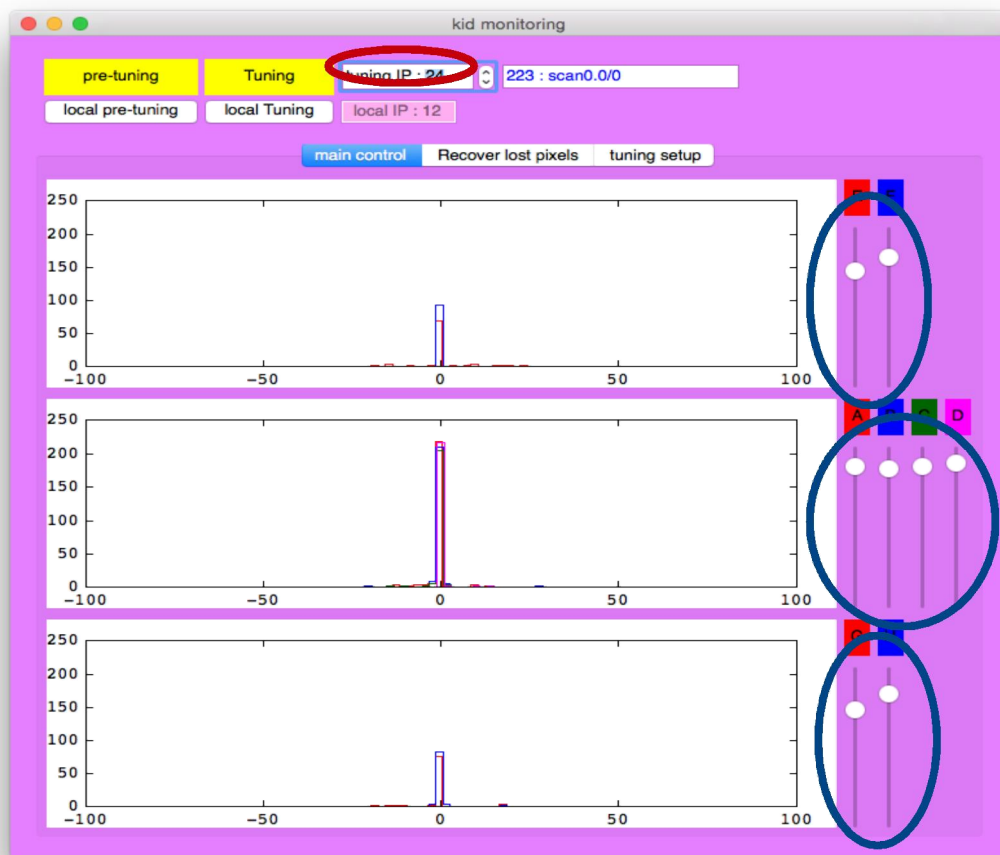


Fig. 8: the monitor window, with the resonances very well tuned. The sliders in the blue circles tell you how many resonances are well placed.

--- Launching trace

This program is typically run on Mac35, but if desired it can also be run on Mac12. On the other hand, it cannot be run on nika2-a! So:

On Mac35 (and 12, if you like):

- 1) Check that lecture is running, then open Xcode (the icon with the hammer on the left of the screen)
 - 2) Go to 'file → Open recent...' and look for 'trace.xcodeproj'. Click on it.
 - 3) Click on the 'play' button on the top left corner of the window that has opened.
- Probably multiple windows will open. The core one is the small orange one with the A to T letters on it (image below).

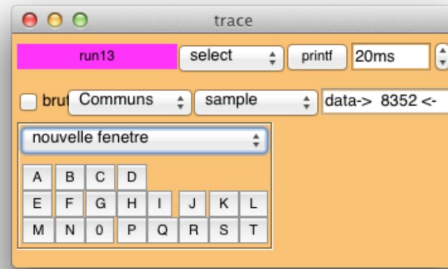


Fig. 9: the trace window form which one can launch all the sub-programs.

NOTE: if you want, clicking on 'nouvelle fenetre' (see figure above), then choosing 'trace tout' from the menu that opens, you can open a window on which you can plot the observed variables. The most common plot is obtained by letting the X axis as it is (it should be 'X communs' and on the menu below it should say 'sample'), while for the Y axis you can click where it says 'Y Communs', choose the feedline you want to look at (for example for the feedline B choose 'Bnikel'), then on the menu below it choose 'RFdIdQ'. You'll get a plot of the frequency shift of the kids of the line B as a function of sample number (i.e. of time, essentially!)

Ok, all the needed programs are now running!!!

3. Recovering the resonances

If you just launched the software, follow step 1 and step 2.

If you already launched the software but for some reason you lost the resonances, you can jump directly to step 2! If that doesn't work.. maybe try to relaunch everything..

--- Step 1: check that the config of the amc cards is right.

To do this you need to:

1) on the Mac35, on the trace window (Fig. 9), click 'nouvelle fenetre' then, from the menu, choose 'Gamc'.

2) In the window that opens (see below), click on the 'tone' controller (blue circle) and set it to 2.

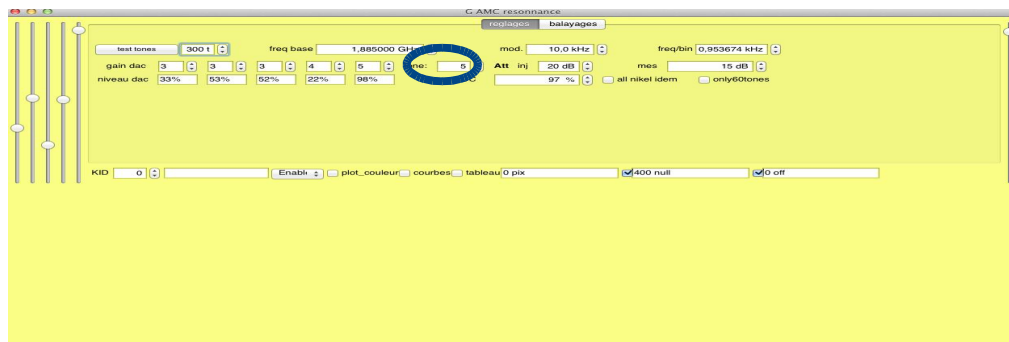


Fig. 10: the Gamc resonance window

3) Then, in the same window, click on 'balayages'. Click then where it says 'normal', and from the menu that opens choose 'gros'.

4) Click on 'measure scan'. Wait. Once finished, it will open a window with a series of 'loops'. Check that the numbers are placed near the minima of the loops. If yes (fig. 11), go to point 7. If not (fig. 12, on next page), go on to step 5.

5) On the Mac8, in the acqui window, click once in each one of the small rectangles associated to the **amc** cards (ONLY where you see amc, DO NOT click where it says Nikel, antenna etc.... See fig. 6! The number of amc cards might vary, so while Gamc should surely be there, there might or might not be more cards, such as for example Hamc, Iamc, Jamc ... Kamc).

6) Go back on the Mac35, and re-click on 'measure scan'. Check that now the blue circles are well placed. If yes, go on to 7. If not, repeat from 5.

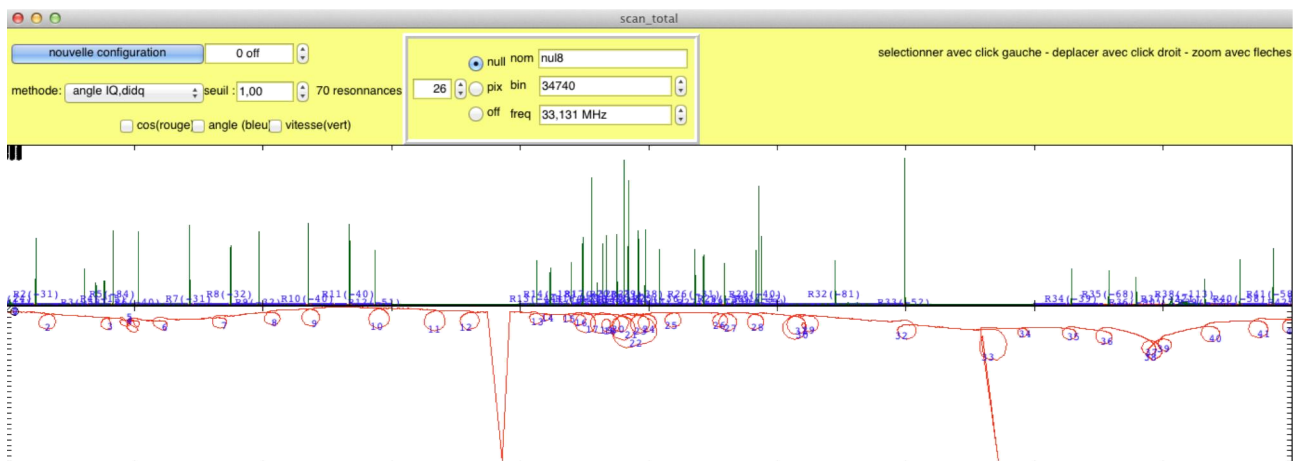
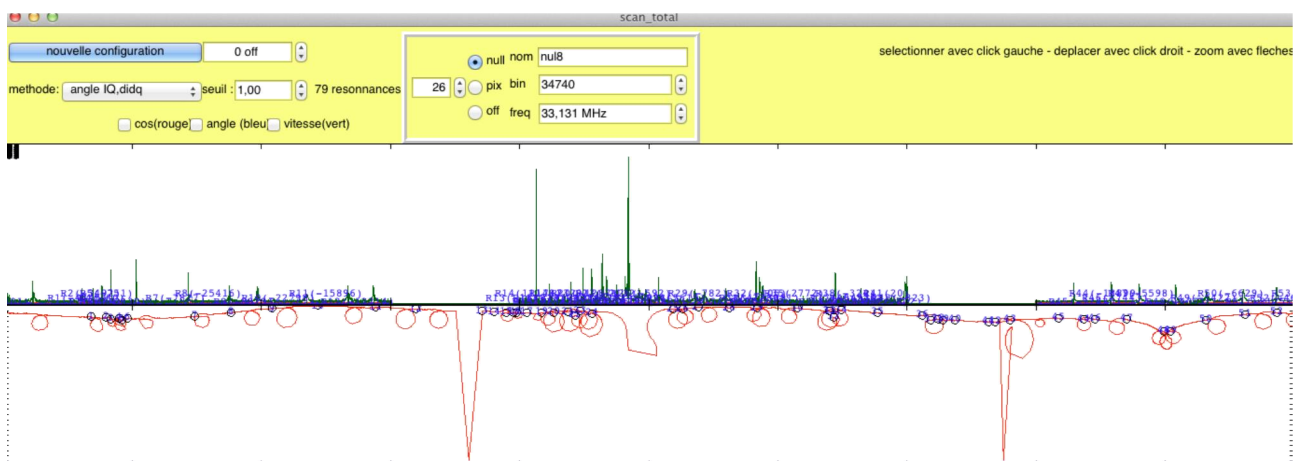


Fig. 11: amc card correctly configured! yeah!



7) Ok, once the amc have been correctly configured, we can go on to really look for the resonances...

--- Step 2: find the resonances from the default parameters

- 1) On the Mac12, check that 'lecture' is well connected (numbers passing by in the yellow part of the window). If you just relaunched acqui, you might need to click on reconnect. If it still doesn't work, see the instructions for Mac12 on 'Launching lecture' in section 2.
- 2) Go to the 'monitor' pink window. Set the 'tuning IP' to 0. Then click on 'Recover lost pixels'
- 3) Click 'load param'. Wait a moment. The mouse pointer will probably become a colored circle then back to normal. If this doesn't happen, once 30 seconds have passed since when you clicked on 'load param' you can in any case proceed to step 4.
- 4) Click on 'measure'
- 5) When it has finished, it will plot a sort of peaked curve and tell you the frequency shift to apply for each feedline. The values will be automatically read by the program. The only issue is with the board 'B', which always measures strange things. So the best is to manually correct the shift to apply by putting in the 'kidB' case a value similar to the one found by 'kidA/C/D' (which correspond to the

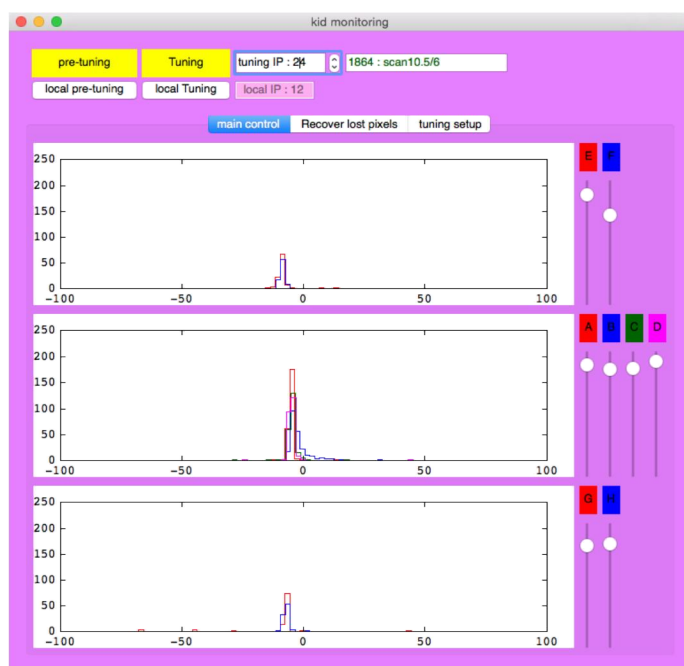


Fig. 13: the monitoring window, again..

other feedlines of the same array). After writing the value, to click 'enter' to be sure that this new value is taken into account.

6) Now click 'apply shift'

7) Click on 'tuning setup'. Where it says 'attente' write 40. For 'periode tuning' set 20s.

8) Click on 'main control'.

9) Now type '24' in the 'tuning IP', and click 'tuning' once.

10) Wait a while: the histograms (that were very likely almost not there..) should now be more or less centered, although typically still a bit spread around

11) Click tuning once again. Now you should get almost a perfect 'delta' function. You can start observing! Yeyyy!!

12) Note that the sliders on the right of the monitor window (Fig. 8) should tell you more or less how many pixels are fine on each array.

13) At the same time, in the Mac8 screen you can check that all the triangular arrows of the 'acqui' window are green and point upwards. If so, it means everything is fine (see fig 15)! NOTE: during a scan, since the tunings are suppressed, the arrows might turn a bit to the left or to the right and become orange. That's normal. At the end of the scan the tunings should restart and the arrows should go back upwards and become green.

4. What to monitor during observations

To be sure that everything is going fine, remember to check, every now and then, the following:

On Mac8 check that:

- **the VNC connection to nika2-a is on.** If you lost the connection you'll see a screen telling 'reconnexion'. In this case see 'VNC connection to nika2-a is lost' in section 5.
- **acqui is running** with all the instruments indicators (Anikel, Bnikel etc) blinking. If you don't see the acqui window, the program crashed: sadly, you need to restart everything.. See **Launching the Camadia software and Recovering the resonances**

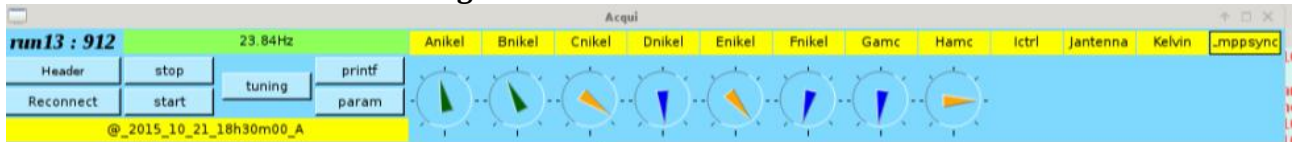


Fig. 14: Sample arrows placement when the tuning is NOT ok



Fig. 15: Arrows just after a good tuning has been performed. Note that they can turn a bit around and become orange during scans, that's ok. What you see on the other hand in fig. 14 is NOT ok!

- **all the arrows** of the acqui window are green (orange is fine too if a scan is ongoing) and **point more or less upwards**. See images above. If not, and the tunings at the end of a scan do not recover the situation, you might want to manually recover the resonances. Before doing this you can cross-check with the info of the 'monitor' screen on Mac12 (see below!). If you decide that recovering the resonances is necessary, see **Recovering the resonances**. Note that, if you did not stop the electronic boards, you can assume that the amc cards are already correctly configured and jump directly to the **step 2: find the resonances from the default parameters**.

On Mac12 check that:

- On the 'monitor' window, when you are on the 'main control' page, you should see **a histogram, more or less centered, and the white circles should all be near the top of the corresponding slider**. The position of the circles tells you how many resonances are well placed of the total available resonances. This value might go down a bit during the observing scans but once a few tunings are performed (for example during tracks, or at the end of a scan) they should go back towards the top. If not, and especially if one of the circles is constantly at the bottom of its slider, all the resonances of the corresponding array might have been lost. You can cross-check with the info given by the arrows of the acqui window on Mac8 (see just above). If a recovery of the resonances is needed, see **Recovering the resonances**. **NOTE:** if you did not stop the electronics boards you can assume that the amc cards are already correctly configured and go directly to the **step 2: find the resonances from the default parameters!**

Important: do not hurry at recovering the resonances if you see that they appear to be lost on the 'monitor' but the arrows in the 'acqui' window still look fine! Very likely in this case the resonances are actually still ok, so, especially if you are making a long map, do not throw it away. Finish the map you are doing and analyze it, it should be ok! Once the scan is finished, better in any case to recover the resonances, to have a visual indicator of the quality of the tuning available, and because the info present on monitor *might* be used to flag the detectors as 'good' or 'bad' by the acquisition software. So, when you can, recover it using step 2 of Recovering the resonances.

5. Common problems...

--- Looking at the 'monitor' screen in Mac12 (as described in the previous page) you see that you lost many resonances, or all of them

This means that you are correctly running the expected checks described in the previous page. Well done! Go to **Recovering the resonances**. In general you should be ok going directly to **step 2: find the resonances from the default parameters**.

--- VNC connection to nika2-a is lost

If the screen that hosts nika2-a on the Mac8 is blocked and says 'Reconnexion', do the following:

- 1) Open a shell on Mac8
- 2) Type 'ssh nika2@192.168.1.36'. The password is the usual one.
- 3) Type 'cd NIKA/Processing/NIKA_lib/Acquisition/appli' (makes your life easier as when you open shells in the nika2-a window you'll be automatically in this dir which is the one where most of the programs must be launched from).
- 4) Type 'rm /tmp/.X11-unix/X1'. If it tells that the file is not there... Ok, no problem!
- 5) type 'rm /tmp/.X1-lock', answer 'yes' to the following question. If it tells that the file is not there... Ok, no problem!
- 6) type 'vncserver -geometry 1800x1000'

The connection might automatically get restored. If not, then open another shell on Mac8 and type 'open vnc://192.168.1.36'. The password is always the same. The window that opens allows you to control the PC nika2-a. Sadly, if this connection is lost, the 'acqui' program blocks, so you also have to relaunch everything: see **Launching the Camadia software** and **Recovering the resonances**

--- The scans give strange results for the pointing

This problem is sometimes observed if all the acqui programs were already running when the NIKA2 session starts and the project is changed to t22. It might be due to a bad data communication between the Camadia programs and the info given by the telescope in this case. The symptom is that, once you make a first scan (typically something fast like a focus with a cross), the trace you observe in the nk_rta output is very bizarre and with strange jumps. If this happens, you have two options:

- *Option A*: if you want to be 100% sure that everything will be ok and well synchronized, make a clean start: kill all the applications that are still running (eg, antenna, acqui etc..) then follow **Launching the Camadia software** and **Recovering the resonances**

- *Option B*: actually, the electronics boards and the resonances are not directly affected by this issue. So in theory it should be ok to just restart the programs taking charge of the pointing:

- 1) On the **Mac8**, in the nika2-a window, find the shells where 'antenna' and 'elvin' are running. They are easy to identify as they are the ones where there are plenty of output lines written in red.
- 2) Do 'ctrl-c' in the antenna and elvin window.
- 3) Relaunch antenna by making './antenna.sh'
- 4) Relaunch elvin by making './elvin.sh'
- 5) Now go to the Pc sami window, find the shell from which 'controle' has been launched. Kill it by making 'ctrl-c', then relaunch with './controle'.
- 6) Wait a while, then, on the nika2-a window, click on 'header' in the 'acqui' window

- 7) Check, on the shell from which 'acqui' has been launched, that it says something like
ctrl reconnecte TCP ip = 192.168.1.32 port 2303 connection ok (see fig. A.2)
If, on the opposite, it says 'ERROR' (see fig. A.3), then repeat steps 5 to 7 until the connection is ok.
- 8) On nika2-a, kill the 'lecture' program then relaunch it
- 9) On the other machines where lecture is running, click on 'reconnect'
- 10) You should be ok now... Check with a pointing that now everything works fine.

--- One of the amc boards is not responding and the resonances cannot be found with the standard 'recover resonances' procedure

This actually never happened over more than two weeks. You must be really very unlucky..! A likely (but untested!) solution is the usual one: make a clean start! So see **Launching the Camadia software** and **Recovering the resonances**. If it still does not work, contact someone in Grenoble: A. Monfardini, A. Benoit, M. Calvo, A. Catalano, O. Bourrion or J.F. Macias Perez should all be able to handle the situation.

--- One of the Nikel boards is not responding and the resonances cannot be found with the standard 'recover resonances' procedure

Again, a very seldom issue. But this has happened before. This problem is typically due to the Nikel board corresponding to the array in question having had an error. So so the following:

- 1) on the Mac8 look at the shells 1 to 6 in the PC sami window (fig. 1 numbers 1 to 6).
- 2) Probably, on one (or more..) of the shells you should notice that the numbers are not increasing and that there has been an error message. If so, click on this shell then make 'ctrl-c' to stop the Nikel program from running.
- 3) Relaunch the program by typing './startup'
- 4) You should see some output lines passing by until you get:
---- attente d'un block header ----
- 5) You can now relaunch the instruments following **Launching the Camadia software** and **Recovering the resonances**.

Again, if it still does not work, contact someone in Grenoble: see list above!

6. What to do when you stop observing?

When not observing, you can leave everything running. But, to avoid filling up space with data of other instruments, **please remember to stop recording files!!!** To do this:

Deactivate the automatic file recording: just go on all the 'lecture' windows and make sure that both the 'nika2' and 'interne' options are deactivated. **Remember to reactivate this option when you restart observing** or you will have no file! (only the 'interne' option on the Mac8 copy of lecture, and 'interne' plus 'nika2' on the copies running on Mac12 and Mac35).



```
appli: bash - Konsole
File Edit View Bookmarks Settings Help
nika2@nika2-a:~/NIKA/Processing/NIKA_lib/Acquisition/appli$ ./antenna.sh
lancement de nika antenna sur mrt-lxl
Port 63405.
connection en attente sur le port 63405
Listening for connections
----- nouveau fichier -----
15:05:23.084258 $$$$$$ ecart mjd = 628726851 $$$$$$$$$$$$
^\\bash: line 1: 14679 Quit ./GetAntennalxl.py
Connection to mrt-lxl.iram.es closed.
nika2@nika2-a:~/NIKA/Processing/NIKA_lib/Acquisition/appli$
```

Fig. A.1: antenna listening on the correct port (63405).

```

acqui: acqui - Konsole
File Edit View Bookmarks Settings Help
Iamc : ***** set gain : 3072 3072 3072 4096 5120
Iamc : ***** set attenuateurs set_INJattenuator=40 set_MEASattenuator=30 set_MEASattenuator=30
Kamc : board and acq thread started
Gamc : board and acq thread startedset_MEASattenuator=30 set_MEASattenuator=30 set_MEASattenuator=30
Jamc : board and acq thread started
Hamc : board and acq thread started
Iamc : board and acq thread startedThread start Thread start Thread start Thread start Thread start
Kamc : ***** set attenuateurs set_INJattenuator=40 set_MEASattenuator=30 $ $ $ $ $ $ $ $ $ $
Kamc : ***** set gain : 3072 3072 3072 4096 5120 set_SYNTHMODULATION=10000
Gamc : ***** set attenuateurs set_INJattenuator=40 set_MEASattenuator=30 $ $ $ $ $ $ $ $ $ $
Gamc : ***** set gain : 3072 3072 3072 4096 5120 set_SYNTHMODULATION=10000
Jamc : ***** set attenuateurs set_INJattenuator=40 set_MEASattenuator=30 $ $ $ $ $ $ $ $ $ $
Jamc : ***** set gain : 3072 3072 3072 4096 5120 set_SYNTHMODULATION=10000
Hamc : ***** set attenuateurs set_INJattenuator=40 set_MEASattenuator=30 $ $ $ $ $ $ $ $ $ $
Hamc : ***** set gain : 3072 3072 3072 4096 5120 set_SYNTHMODULATION=10000
Iamc : ***** set attenuateurs set_INJattenuator=40 set_MEASattenuator=30 $ $ $ $ $ $ $ $ $ $
Iamc : ***** set gain : 3072 3072 3072 4096 5120 set_SYNTHMODULATION=10000 $Kamc_F_ Gamc_F_ Jamc_F_ Hamc_F_ Iamc_F_
_F_ $$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$
--- Anikel ip=192.168.1.221 port=55559
--- Bnikel ip=192.168.1.222 port=55559
--- Cnikel ip=192.168.1.223 port=55559
--- Dnikel ip=192.168.1.224 port=55559
--- Enikel ip=192.168.1.226 port=55559
--- Fnikel ip=192.168.1.227 port=55559
--- Lctrl ip=192.168.1.32 port=55560
--- Omppsync ip=192.168.1.243 port=55559

--- Emission broadcast bloc header ---
Anikel reconnecte TCP ip = 192.168.1.221 port 2611 connection state=3 : deja connecte !
Bnikel reconnecte TCP ip = 192.168.1.222 port 2612 connection state=3 : deja connecte !
Cnikel reconnecte TCP ip = 192.168.1.223 port 2612 connection state=3 : deja connecte !
Dnikel reconnecte TCP ip = 192.168.1.224 port 2612 connection state=0 : reconnect OK
Enikel reconnecte TCP ip = 192.168.1.226 port 2612 connection state=3 : deja connecte !
Fnikel reconnecte TCP ip = 192.168.1.227 port 2612 connection state=3 : deja connecte !
Lctrl reconnecte TCP ip = 192.168.1.32 port 2303 connection state=0 : reconnect OK
Mantenna reconnecte TCP ip = 150.214.224.59 port 63405 connection state=3 : deja connecte !
Omppsync reconnecte TCP ip = 192.168.1.243 port 2613 connection state=0 : waitForConnected tcp ERROR=0 state=0
ERROR $$_ANT_MJD_ANT_]

```

Fig. A.2: successful connection to the controle program ('Lctrl reconnect...')

```

acqui: acqui - Konsole
File Edit View Bookmarks Settings Help
--- Fnikel ip=192.168.1.227 port=55559
--- Ictrl ip=192.168.1.32 port=55560
--- Lmppsinc ip=192.168.1.243 port=55559

--- Emission broadcast bloc header ---
Anikel reconnecte TCP ip = 192.168.1.221 port 2611 connection state=3 : deja connecte !
Bnikel reconnecte TCP ip = 192.168.1.222 port 2612 connection state=3 : deja connecte !
Cnikel reconnecte TCP ip = 192.168.1.223 port 2612 connection state=3 : deja connecte !
Dnikel reconnecte TCP ip = 192.168.1.224 port 2612 connection state=3 : deja connecte !
Enikel reconnecte TCP ip = 192.168.1.226 port 2612 connection state=3 : deja connecte !
Fnikel reconnecte TCP ip = 192.168.1.227 port 2612 connection state=3 : deja connecte !
Lctrl reconnecte TCP ip = 192.168.1.32 port 2303 connection state=0 : waitForConnected tcp ERROR=0 state=0
ERROR
Jantenna reconnecte TCP ip = 150.214.224.59 port 63405 connection state=3 : deja connecte !
Lmppsinc reconnecte TCP ip = 192.168.1.243 port 2613 connection state=0 : waitForConnected tcp ERROR=0 state=0
ERROR $$
fakeADC link proc#0 is OK proc#1 is OK proc#2 is OK proc#3 is OK
fakeADC link proc#4 is OK
proc#0 is OK proc#1 is OK proc#2 is OK proc#3 is OK proc#4 is OK
i>>>board started<<<<

initialisation de la reception commandes z=6 port=55563
boxG en attente de commandes sur le port 55563 Gamc ----->> fixe le delay de modulation a 93 %, Val modulation 200
Iamc----->> setCount = 4 div_kid = 40
Iamc_F_ >>>board started<<<<

initialisation de la reception commandes z=7 port=55564
boxH en attente de commandes sur le port 55564 Hamc ----->> fixe le delay de modulation a 93 %, Val modulation 200
Iamc----->> setCount = 4 div_kid = 40
Iamc_F_ $ $ $ $ $ $ $ $ $ $ $ $
Iamc : ***** set gain : 3072 3072 3072 4096 5120
Iamc : ***** set attenuateurs set_INJattenuator=40 $ $ $ set_MEASattenuator=30 $
Iamc : board and acq thread started$$ Thread start $
Iamc : ***** set gain : 3072 3072 3072 4096 5120
Iamc : ***** set attenuateurs set_INJattenuator=40 set_MEASattenuator=30
Iamc : board and acq thread startedThread start
Iamc : ***** set attenuateurs set_INJattenuator=40 set_MEASattenuator=30 $ $ $ $ $ $ $ $ $ $
Iamc : ***** set gain : 3072 3072 3072 4096 5120 set_SYNTHMODULATION=10000 $
Iamc : ***** set attenuateurs set_INJattenuator=40 set_MEASattenuator=30 $ $ $ $ $ $ $ $ $ $
Iamc : ***** set gain : 3072 3072 3072 4096 5120 set_SYNTHMODULATION=10000 Gamc_F_ Hamc_F_ $$$$ I

```

Fig. A.3: connection error while trying to contact controle. Restart controle and retry connecting...