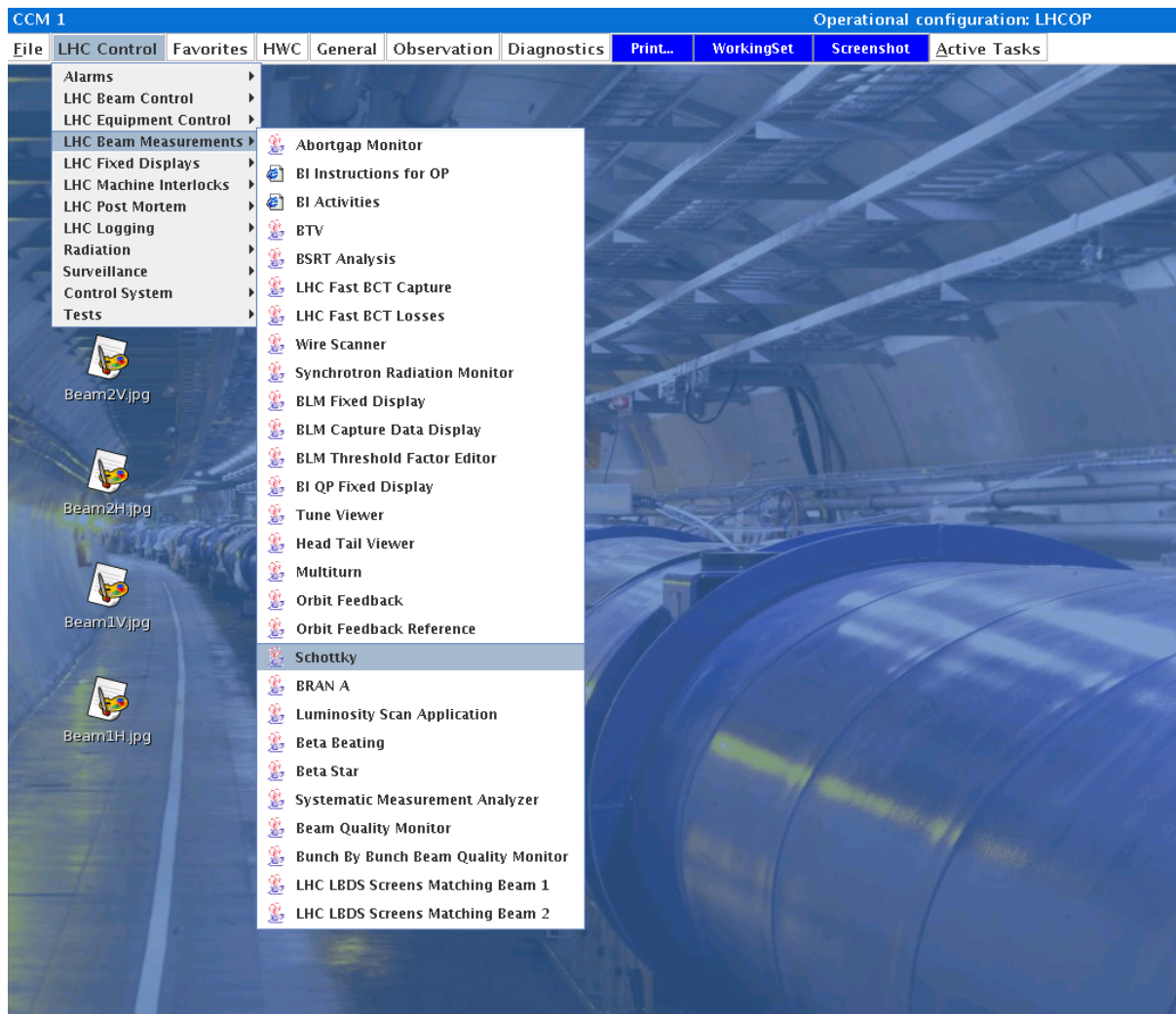# MANUAL FOR THE SCHOTTKY USER

1/ How to launch the Schottky application (GUI) from the CCM of the LHC CCC?

2/ First Window appearing after having launched the application

On this first page The 4 Spectra are the signal given by the Schottky: In blue Beam1 Horizontal and B1 Vertical and red are B2 Horizontal and B2 Vertical.

To be able to change the setting you have to be the one managing the application enable the 2 options: Read & Set and Manually Change the Settings.

You have also information about the Beam, the Beam Mode, The playlist mode…on left part of the window

**Playlist Mode, on Stop or Start with the bunch # being selected for beam 1 and 2**

Presence or not of the beam

State of the Fit for each channel, green flag ok, red not.
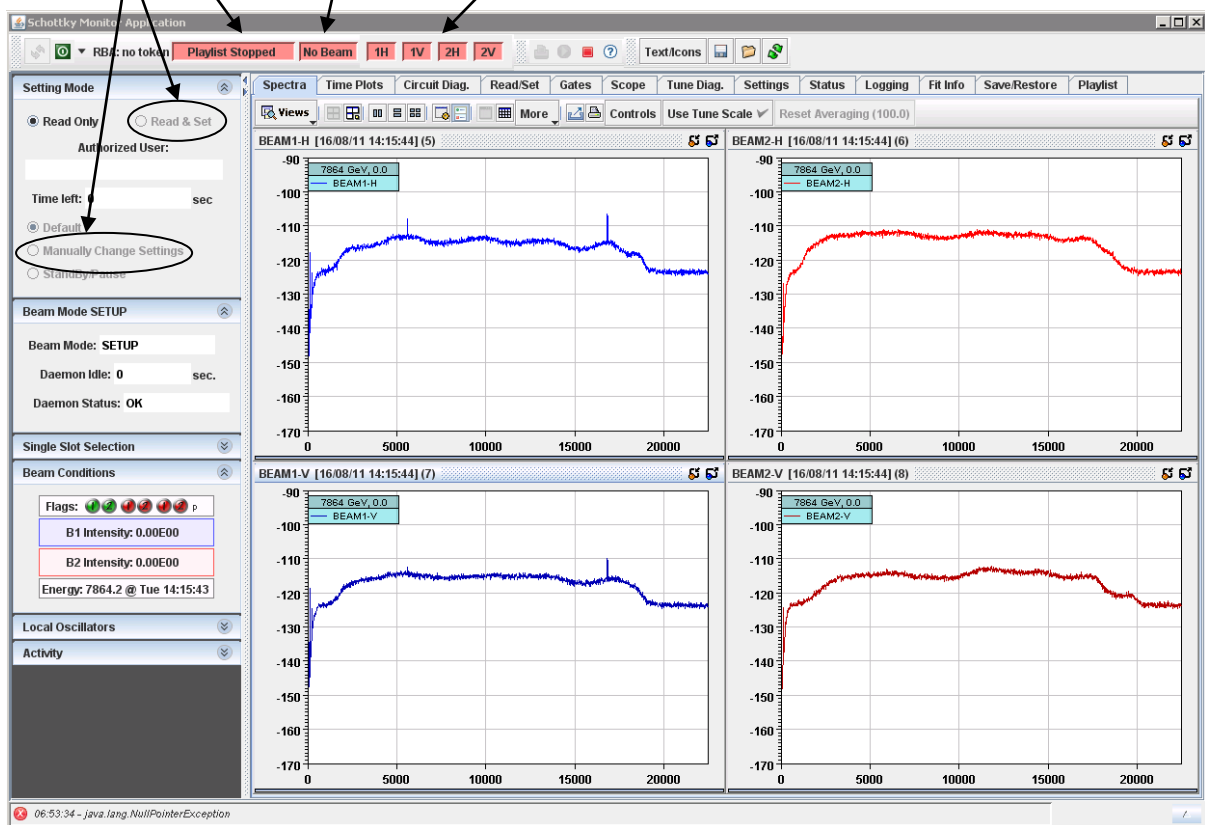
3/ The different Tabs you Can Access

Spectra: gives you the shape of the spectra FFT, using the **view** tab you can also check the shape of the Fit at this time. You can also make some measurements using the markers, just click on a point on the plot and a marker will appear, you can then do some calculations using different markers and using the **Control window** to manage them and remove the markers**.**
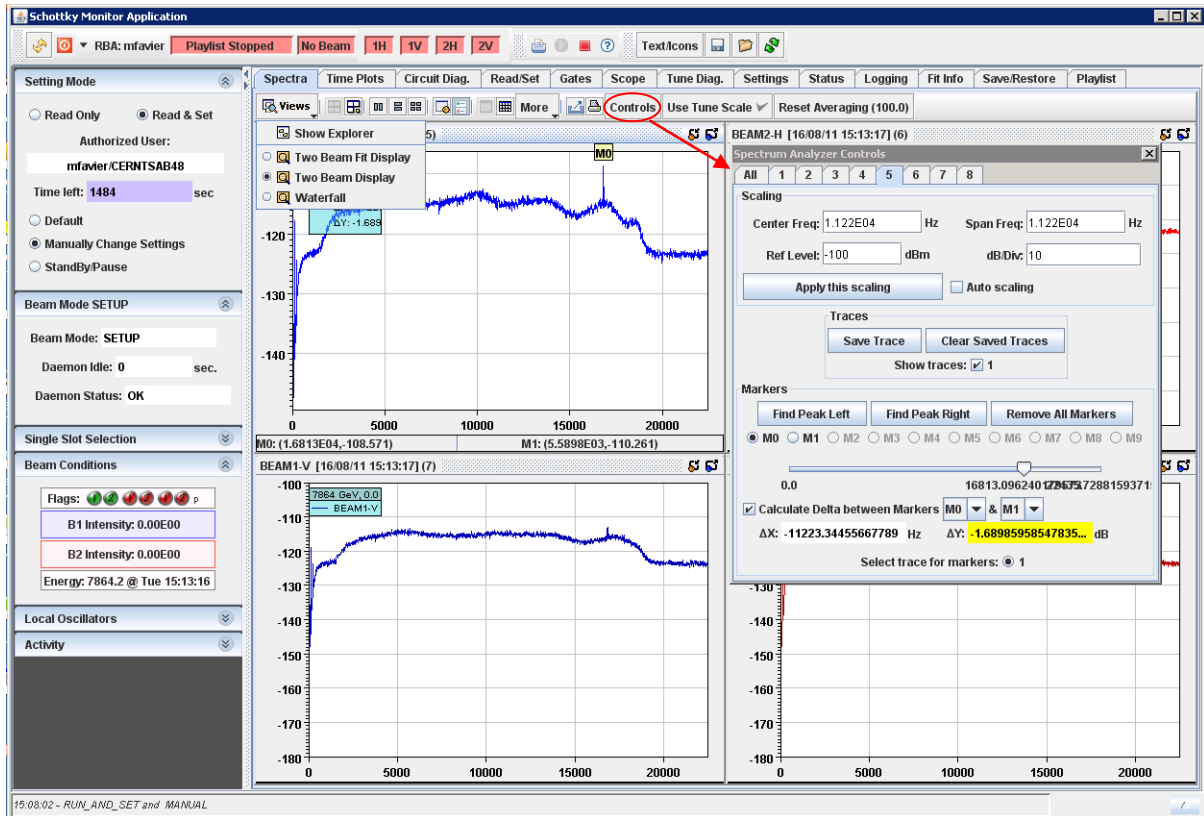

Time Plots: Gives you access to the evolution of **tune, chroma, emittance and momentum spread** along the time. You will see there is 2 different tune, the one called **tune**(which is logged in Timber) is directly computed from the fit and the one called **coherent tune**, which should be almost the same, is computed directly according to the position of the peaks of the Schottky bands.

Circuit Diag.: Used for the calibration of the instrument, unnecessary to change anything

Read & Set: Should not be changed if the settings are well set**.**

Gate: Shows you the filling pattern of the fill, adding bunches during injection for example. The **Bunch Selection** option should be set on Slots to do bunch by bunch measurements. The **Retrieve Pattern** Button permits you to update the filling pattern, if bunches are beeing injected at the same time for example.
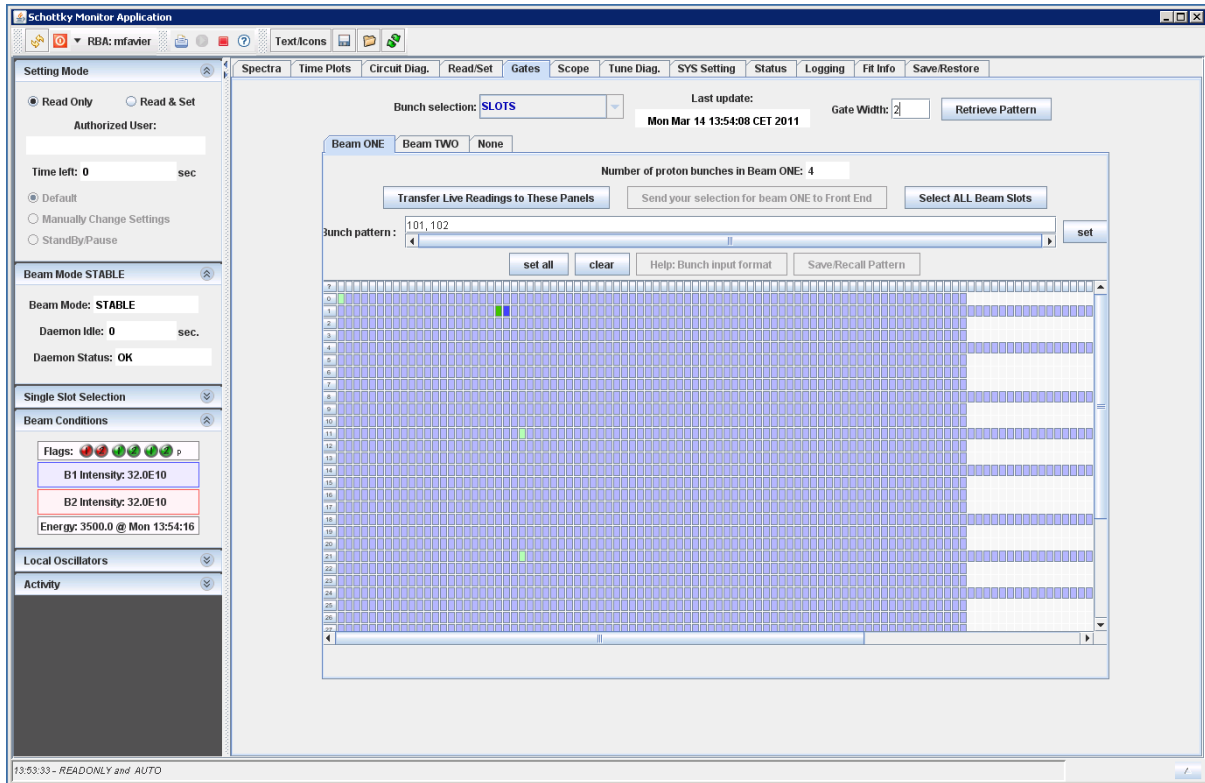
From this tab you can directly scan the bunch of your choice to see its spectra and corresponding parameters. Adjust the **Gate width** (should be 1 for scanning one bunch) press enter to validate it. Then click on the bunch you want to select, and then click on **send your selection to the front end** to validate it, if the bunch has been well taken into account its number should appear in the text window called Bunch Pattern and it should appear darker than the others.

Scope: Not useful for you.

Tune Diag: Diagram on which you have 2 different sorts of points:

The Transients points = each time the tune is calculated, a corresponding point (cross shape) appears on the diagram.

The Averaged points= If the playlist is on, after having scanned a bunch during x seconds you see the averaged tune of this bunch appearing as a square. Clicking on Labels you can find out which bunch does this averaged point corresponds to.

Settings: You can modify the **Num For Averaging** it acts on the number of turn taken to make an average of the FFT. The highest it is the longest it will be to end up with a stable signal for the FFT.

The Approx average Setting time tells you how long you should wait according to this Num For Averaging to get a stable FFT.

Status: Tells you about daemon status and BQBBQLHC (Front End)

Logging: Shows you the different values which will be logged in the TIMBER Data Base, as FFT, Fit...

Fit Info: Information about the fit and the parameters derived from them.

Save/Restore: If you have particular setting you can save them and be sure you won't forget them if you want to use them next time.

Playlist: If you directly use the big green button, the playlist will by default scanning all the bunches of the fill.

You can still set few parameters as the **width of Slot Selection**, **Time between Slot Selection Changes(seconds)** how long you want to scan a bunch. Be careful for this you have to take into account the **Num For Averaging** because as I said, The highest this Num will be the longer it will take for the FFT to stabilize and then the longest you will have to scan a bunch.

Then you have 3 other options
Start with Beam Bunch Number: be careful, if you want to start by the slot #49 and this bunch is the 2nd in the filling scheme, then you have to type 2 and not 49 to begging with it.
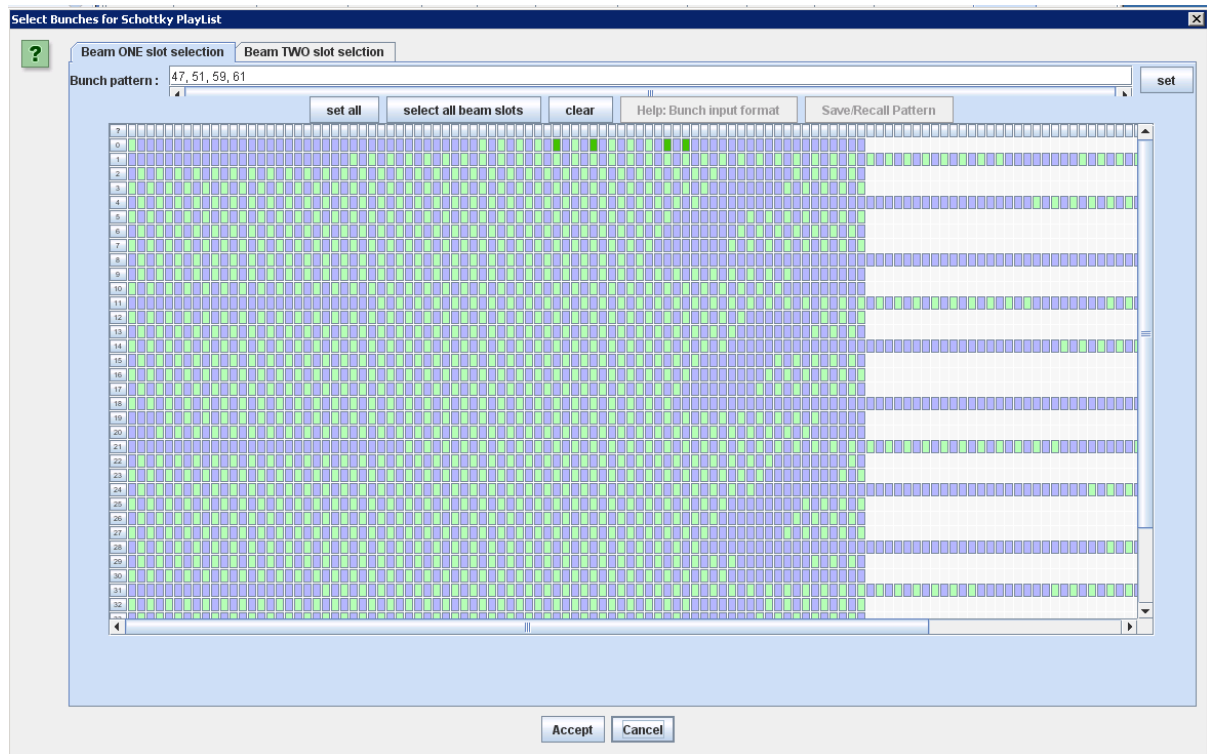**Maximum Number of Beam Bunches:** Maximum bunches you can scan using the playlist
**Beam Bunch Step size**: If this is equal to 2, it means it will scan 1 bunch every 2.

Use the playlist manually:

To make your own playlist, cross the button **Munual Bunch Selection**, then Click on **launch bunch Selection Gui,** the following window will appear.
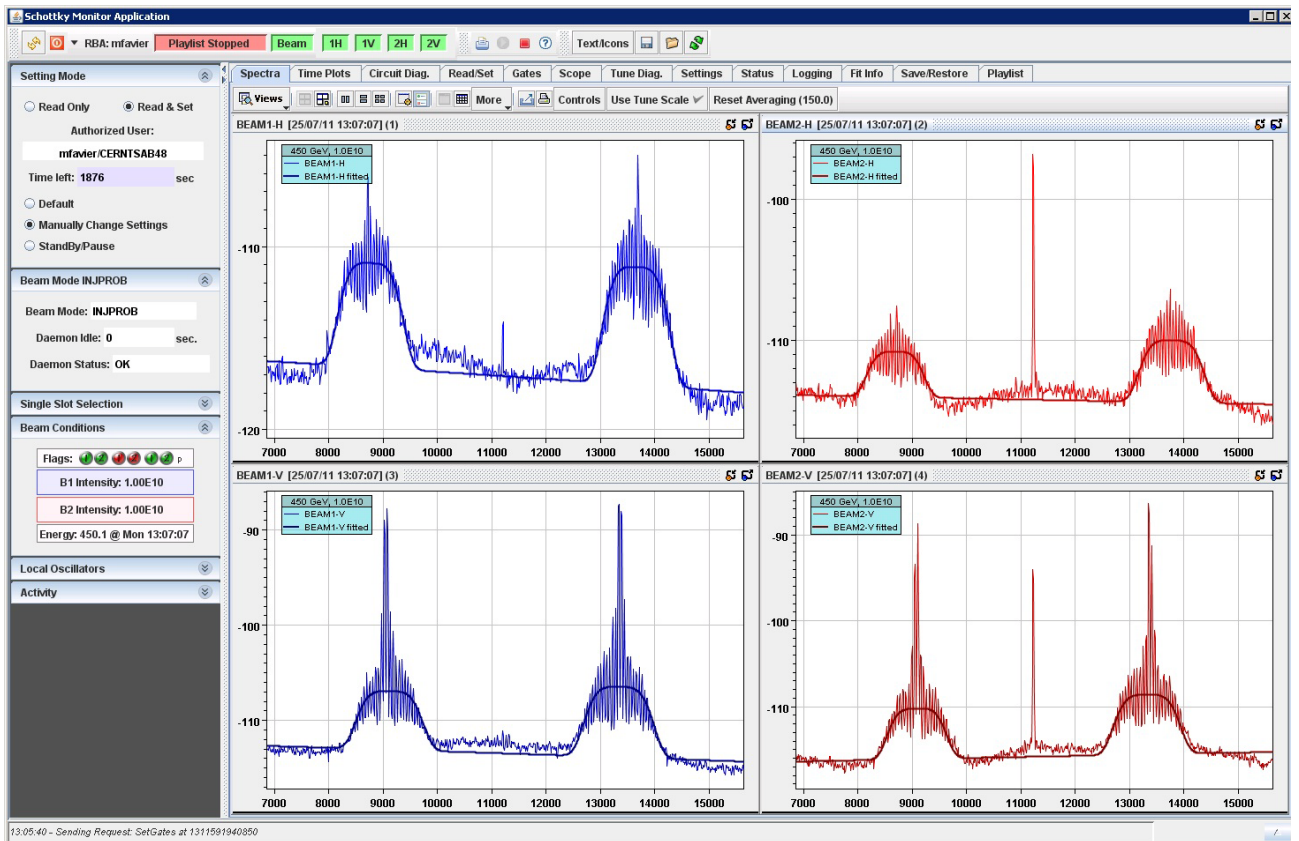

In the Bunch Pattern Window, you can add the slot # of the bunch you want to scan (copy past or directly writing them by hand) separated by a comma. Example: 49, 51, 91,.. Then click on SET, on the right of the window and ACCEPT on the bottom. Repeat the same foe beam 2.

Shape of the Schottky Signal from a Pilot at Injection:
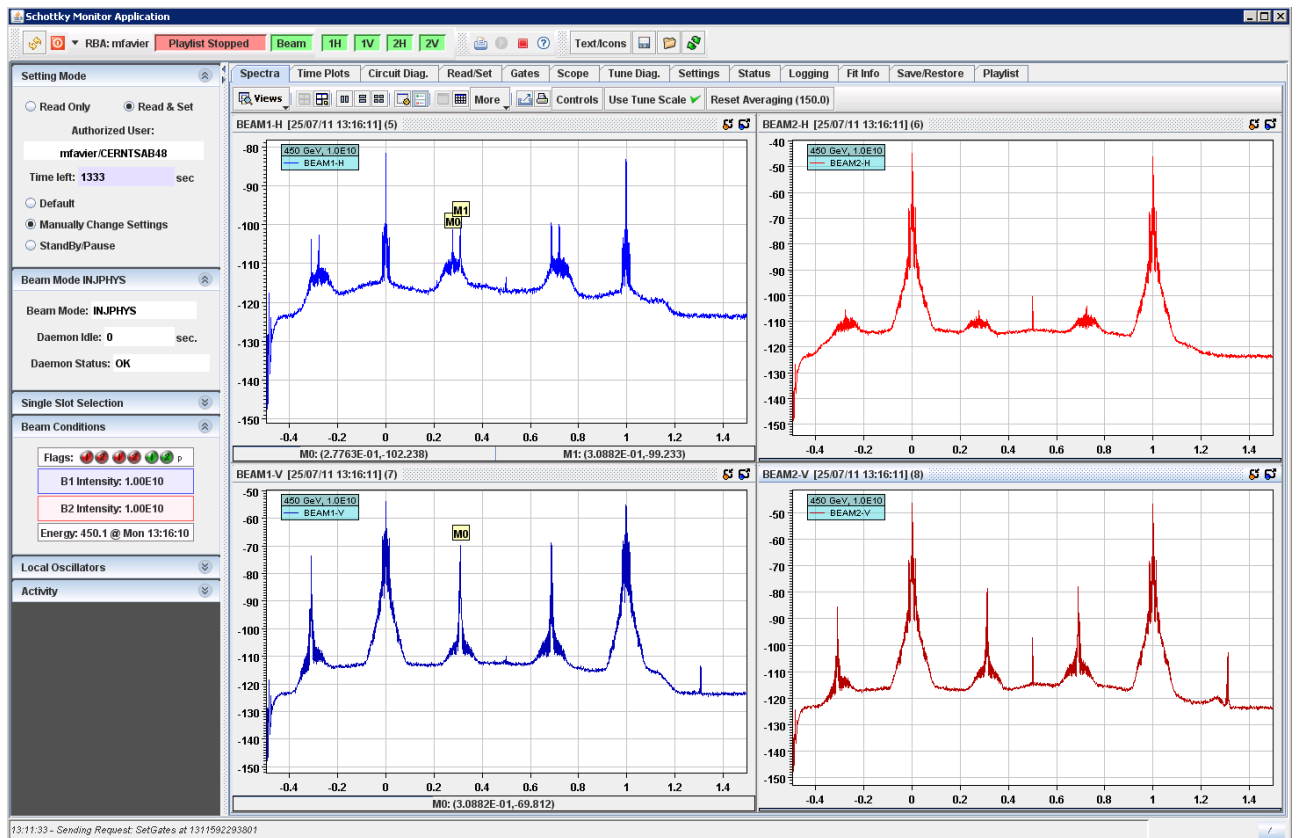
Fit of the Schottky Signal from a Pilot at Injection:

The fit is the curve from which the measurement of tune, chroma, emittance and momentum spreed are derived.