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News

The latest version of Spike2 is **5.09**, which is available to download from the [CED updates](#) page for registered v5 users. This revision includes new script commands for IIR filtering, and a number of additions to the clustering functions that now allow you to view the K Means and Normal Mixtures clustering processes, choose which principal components to display and set a circular “jitter” to aid visualisation of clusters.

Version **5.10** is in the works, and will include a multi-window view for on-line display of all wavemark channels in a data file. You will be able to set the number of spikes to overdraw and a time range of data to display.

A full list of new features is available from the updates section of the website.

A demonstration version of the current software is also available [here](#).

Version **4.21** of Spike2 is downloadable for registered v4 users.

Version **3** of Signal is now available. This version implements many new features including single channel patch clamp analysis and expands on existing features with new improved curve fitting and enhanced auto-average measurements.

Version **3.01** of Signal is nearing release. This will include functions allowing the last n sampled frames to be overdrawn.

A demonstration version of Signal version 3 is also available [here](#).

Version **2.15** of Signal is downloadable for registered v2 users.

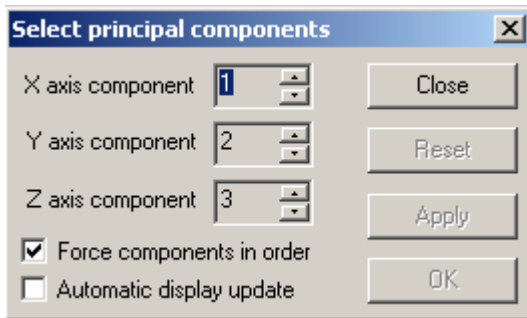
Spike2

- Q. I would like to be able to choose which three principal components are displayed in the Spike2 clustering window.
- A. The latest Spike2 version 5 includes a number of additional functions added to the clustering window to enable better visualisation of the data. You can set the background colour in the clustering dialog from the Change colours menu, as well as make use of the following new functions:

Select Principal components

In response to the above user request, you can now choose which principal components to display in the clustering window using the Select Principal Components command in the File

menu. You can force the components in order to ensure that the X component is the lowest and Z the highest, and cause the cluster window to update on every change made. The Reset button always selects the first three principal components.

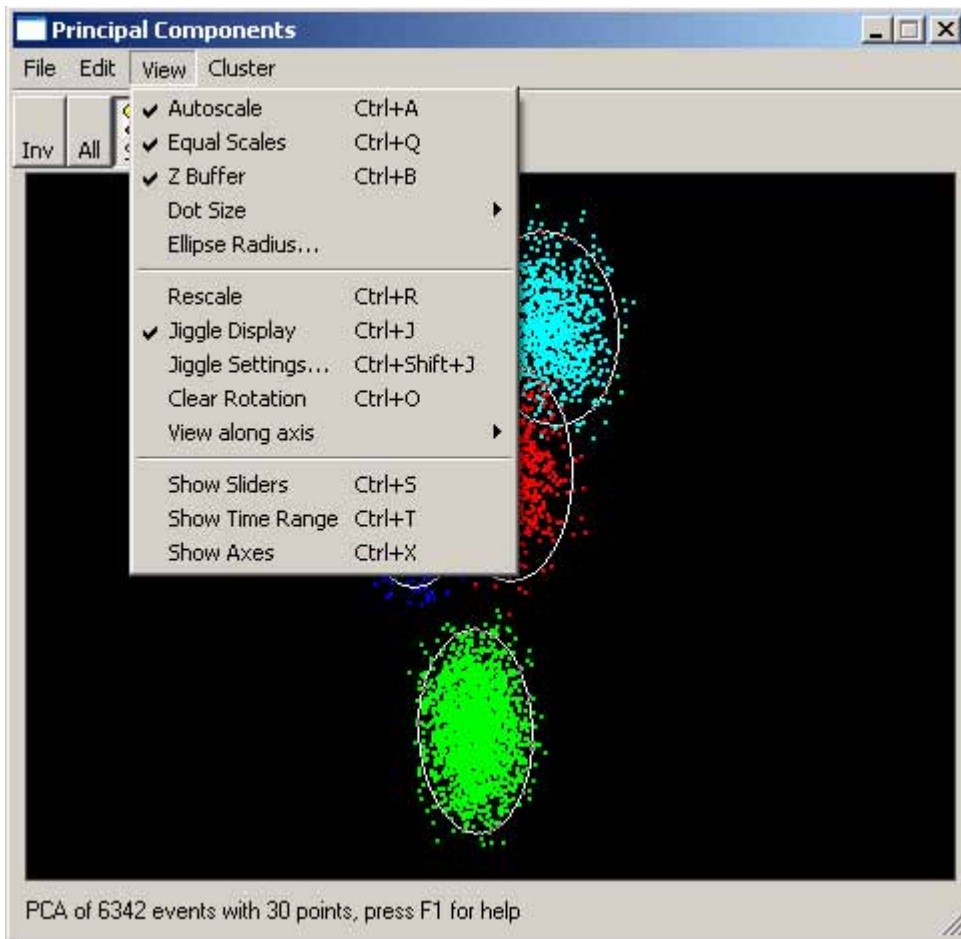


Display Jiggle

There is a new setting in the cluster window View menu to "jiggle" the display around the current view angle. This means that, after rotating the display to get the best view of the clusters, you can apply a small jitter to help visualize the clusters in three dimensions.

View along axis

There is another new command in the View menu that enables you to directly view the cluster data along the X, Y or Z axis.

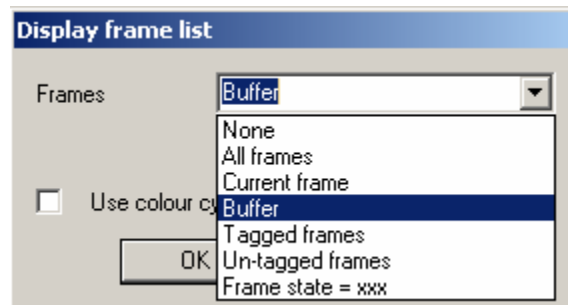


Display clustering process

When using the K Means and Normal Mixture clustering functions, you can follow the clustering process in detail. You can also break out of a long clustering operation.

Signal

- Q. I would like to overdraw selected frames during sampling with Signal. To start with I would just like to be able to specify a single frame for overdraw, and be able to update this as required.
- A. Signal version 3 allows you to overdraw nominated frames during sampling. The buffer frame has now been added to the frame display list, meaning that you can copy a selected frame to the buffer during sampling. Simply select Buffer from the frame display list and, once you have copied your nominated frame to the buffer, this can be overdrawn on every new sweep.



Signal version 3.01 will expand on this by adding a last n frames filed option to the frame display list. This will enable you to overdraw a selected number of the last frames sampled, and will update appropriately as new data is added.

Scripts: Spike2

- Q. Do you have any example scripts that show how to use the interactive dialog commands in Spike2 version 5?
- A. The attached `IIRMake.s2s` script shows an example of using a dialog that responds to user interaction by enabling and disabling various dialog fields in response to any changes made. This script also shows how to use tooltips for dialog items. Moving the cursor over the dialog text will show a tooltip describing the field setting.




The script can be used to write example IIR filter commands. The user specifies filter settings in a generated dialog, and the script then writes the code for the correct script functions. These can then be used in your own scripts. The IIR commands are new in the latest Spike2 version 5, and you can use them to generate and apply Infinite Impulse Response filters to data that is held in arrays of real numbers. You can create digital filters that are modelled on Butterworth, Bessel, Chebyshev type 1 and type 2 highpass, lowpass, bandpass and bandstop filters. There are also commands to create digital resonators and notch filters.

When compared to FIR filters, IIR filters have the advantage of being able to generate much steeper edges and narrower notches, and they are causal which means that the filter output is only affected by current and previous data. However, they also have the disadvantage that they impose a phase shift on the data that varies with frequency. This means that they do not preserve the shape of a waveform, in particular, the position of peaks and troughs will change by a small amount.

The IIR commands in Spike2 also allow you to check the impulse, step, frequency and phase response of any generated filters, and we strongly recommend that you do so before using any of

the generated filters for a critical purpose. For a more in-depth description of the use of the IIR script commands, and the different types of filter, see the Spike2 on-line help.

Scripts: **Signal**

- Q. I would like a script that allows me to print a specified range of frames from a data file. i.e., all Tagged frames, or a frame specifier such as 2, 4, 8 or 2...8.
- A. The attached script, `PrintFrames.sgs`, will print the specified frames and time range selected by the user. When the script is run, it prompts you to open a file and set up the view ready to print. You can then specify which frames to include. When you click OK, the selected frames are printed to the currently selected printer. 

Did you know...?

You can now copy the position of horizontal cursors, and the differences in Y-axis units between multiple horizontal cursors to the clipboard. To do this, right-click a horizontal cursor and select Copy position from the context menu.

Recent questions

- Q. Is there any way to save the values displayed by using the Alt and drag interactive measurements function?
- A. The interactive measurements feature in Spike2 now allows you to save the measurement values. When dragging the cursor, release the Alt key and use either the C or L key to copy or log the displayed values.

User Group

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