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News

The latest version of Spike2 is **5.11**, which is available to download from the [CED updates](#) page for registered v5 users. This revision includes the new Spike Monitor window, which displays all of the WaveMark channels in a data file.

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 **4.22** of Spike2 is downloadable for registered v4 users.

Version **3.02** of Signal is now available. This includes a new feature that allows the last n filed frames to be overdrawn when sampling, and the new IIR filtering script commands.

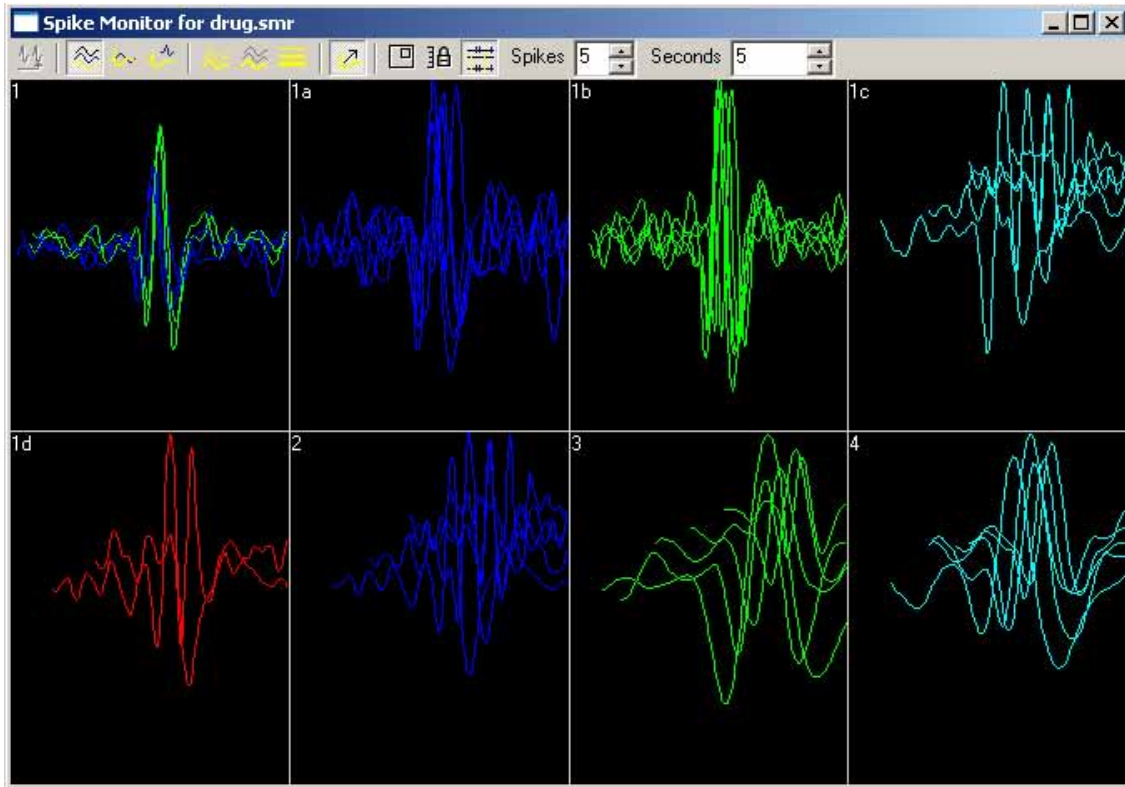
A demonstration version of Signal version 3 is available [here](#).

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

Our U.K training days for 2005 will take place on the 17th – 18th of March at St. John's Innovation Centre, Cambridge. This year we have added a Workshop thread where users can discuss their requirements with a CED sales engineer or programmer. Details of the training day sessions and a booking form can be found in the [training day](#) section of our website.

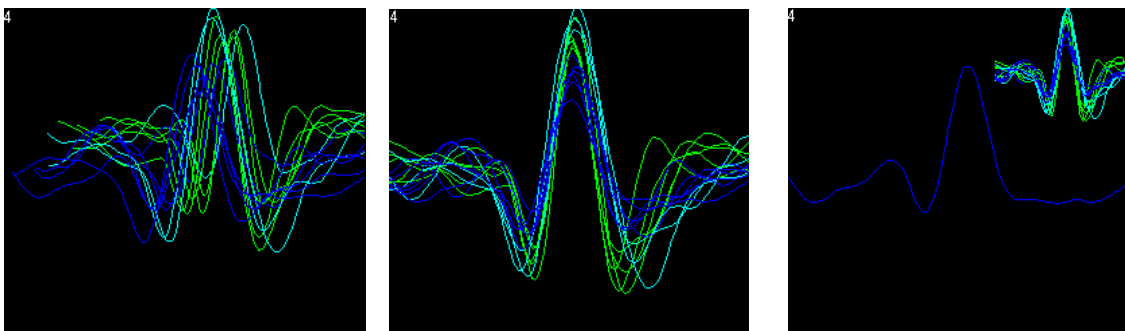
Spike2

- Q. I regularly use the WaveMark dialog on-line monitor to view incoming spike data, but find it a limitation that you can only view one spike channel at a time. It would be very useful to be able to view multiple spike channels in the on-line monitor dialog.
- A. Spike2 now includes a new Spike Monitor window available from the View menu, which displays the current spike activity on all channels during sampling. The Spike Monitor window is divided into individual cells, each displaying a spike channel from the data file with the channel number at the top left of the cell, and all spikes from that channel that lie in a user-defined time range back from the current time. The Spike Monitor window is linked to the Edit WaveMark dialog; you can double-click a cell to open the Edit WaveMark dialog, and select the channel to use in the dialog by single-clicking on a cell. The toolbar at the top of the window controls the various display options.



The toolbar at the top of the monitor window controls the display options. There are toolbar buttons to control the 3D, 2D or 2D separate display modes for the data and the colour display of the spikes. Controls are also available to allow smooth display updates, lock the vertical scaling of the displayed spike data, include duplicate spike channels and follow any marker filter settings for the spike data channels.

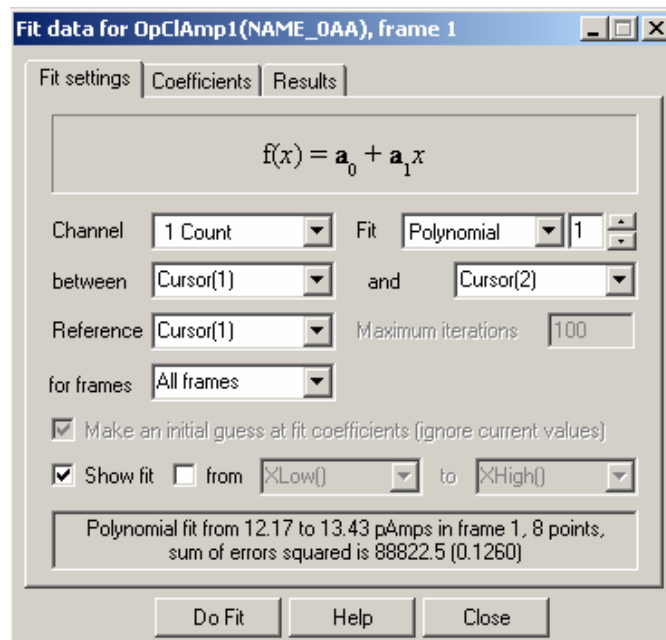
The final two fields are used to set the number of spikes to display, between 1 and 40, and the time range to display prior to the current spike.



From left: 3D, 2D and 2D separate display modes in the Spike Monitor

Signal

- Q. I would like to be able to fit Polynomial functions to data in Signal; can I use the script commands to generate these?
- A. The curve fitting functions in Signal version 3 have now been extended to match the curve fitting options available in Spike2. The Fit data command from the Analysis menu opens a tabbed dialog that allows the fitting of various functions to channel data in a file, memory or XY view. Currently you can fit Exponential, Polynomial, Gaussian and Sine functions to data, and the type of fit and data range to use is selected in the Fit settings tab. The Coefficients tab of the dialog allows you to set the starting point of the fit and optionally fix the coefficients to use. The final tab in the dialog displays the fitting results and residual errors once a fit has been made to any data. The fit is displayed in the selected view, and can be cleared or edited at any time by right-clicking on the fit line itself. Full details of the enhanced fitting functions can be found in the Signal version 3 on-line help.



Enhanced curve fitting dialog

Scripts: Spike2

- Q. I remember reading in a past newsletter that you were working on a script for manual sleep scoring of data. Is there any further information on this?
- A. We have recently added two new scripts to the website. The first of these, `Sleepscore.s2s`, can be used for manual sleep-scoring of polygraph data. It allows the user to perform the following tasks:
- Subdivide a polygraph in a Spike2 time view into epochs of the desired length.
 - Visually inspect the data and assign each epoch to a user defined state, e.g. sleep stages. The epochs are displayed as a new 'States' channel in the data file with each different stage represented by a particular colour code.
 - Mark the start and end of user-defined 'events' in the recording, such as apneas and arousals.
 - Display 'skyline' plots of power in user-defined bands next to selected EEG channels.

- Display banded power spectra of selected EEG channels for the current epoch.
- Show a table of power in bands for the current epoch.
- Generate a report file suitable for further analysis with spreadsheet software.

The second new script, `Levelind.s2s`, provides a convenient method of displaying and analyzing the times when a waveform is between two user-defined levels, or crosses an upper or lower threshold. It allows the user to do the following:

- Set an upper and lower threshold level on a selected waveform channel.
- Create a 'level indicator' channel in the data file that marks periods when the waveform is above, below and between the levels, using coloured states.
- Choose an appropriate colour code to mark the high, low and between states, e.g. Red/amber/green.
- Plot the duration of all or individual states as a function of time.
- Display the distribution of state durations as a bar chart.
- Generate a report suitable for further analysis with spreadsheet software.

You can find both of these scripts in the [Spike2 scripts](#) section of our website. If you have any feedback or would like to see any other features implemented in these scripts, please let us know.

Scripts: Signal

Q. I would like to be able to tag a subset of frames in a Signal data file, for example, odd or even frames or tag all even frames between 1 and 20. Is there any way to do this from the multiple frames command?



A. The attached script, `OddEvenTag.sgs` is an example of applying a given function to a subset of frames in a data file. The script allows the user to tag odd numbered frames, even numbered frames or all frames in a data file. This script could easily be adapted to apply channel modifications or certain analysis functions to a subset of frames, in place of the tag frame function

Did you know...?

The standard maximum number of data channels that can be stored in a Spike2 data file is 32, but with version 5 you can create files with space for up to 256 channels. This can be useful for scripts such as the `SleepScore.s2s` script, which creates a number of additional channels in the data file to show analysis results. If you need to modify an existing data file to include more channels, use the Export As.. function and edit the number of channels to include in the output file from the Export dialog.

Spike2 can also create data files with up to 256 channels ready for sampling from the Channels tab of the sampling configuration. Spike2 version 4 can read files with up to 100 data channels from version 4.03 onwards. All Spike2 versions prior to this can read files with up to 32 channels only.

Recent questions

Q. I am using Spike2 to record data from a number of subjects at the same time, and using different experimental protocols on each subject. Is it possible to view these in separate windows, and choose which channels to show in each window?

A. You can create duplicate windows of a time view from the Window menu Duplicate command in Spike2. Once you have created the new window, it is independent of the original, meaning that you can choose which channels to display, the time range to display and any draw modes to use for each individual window. However, the data channels within each window show the same data

as the original, so any changes made to the data (such as applied channel processes) will cause all duplicated windows to update.

User Group

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