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NEW! Hints



When you see this icon, double-click it to reveal extra hints or tips relating to the current newsletter article.

News

Spike2 and Signal Training Days

Our US Spike2 and Signal training courses will be held on Thursday 1st and Friday 2nd of November, prior to the Society for Neuroscience meeting in San Diego. The venue will be the Holiday Inn San Diego – On The Bay. These training days are for both existing and prospective users of Spike2 and Signal and are suitable for beginners and advanced users. There is also our popular Workshop thread where you can discuss your particular requirements with a CED engineer or programmer in a small group environment.

If you or any of your colleagues would like to attend, please follow the links to view the [training day program](#) and complete the [registration form](#). Please give a short description of the type of research that you do and analysis that you are interested in. This will allow us to tailor sessions for specific requirements.

Meetings and events

Scandinavian Physiological Society 2007

University of Oslo
Oslo, Norway
August 10th – 12th 2007

Scottish Neuroscience Group Annual Meeting

University of Edinburgh
Edinburgh
August 31st 2007

IX meeting of the International Basal Ganglia Society (IBAGS)

Hotel Zuiderdein
Egmond aan Zee, Netherlands
September 2nd – 6th 2007

Cardiac Electrophysiology and EWGCCE

University of Manchester
Manchester
September 5th – 8th 2007

European Society for Muscle Research - EMC

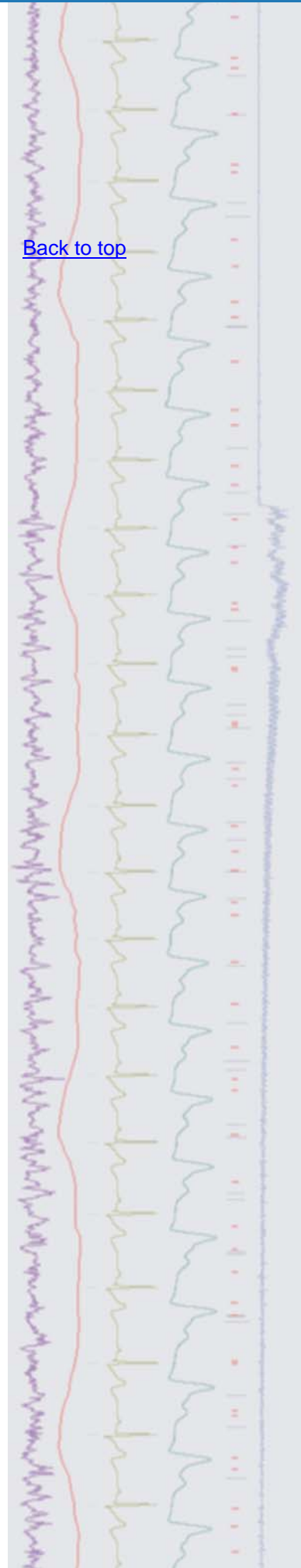
Essinge Conference Center
Stockholm
September 8th – 12th 2007

Latest versions of Spike2 and Signal

Updates for Spike2 and Signal are available from the [CED downloads](#) page, or by clicking on the links in the table below. Demonstration versions of the latest software are also available.

Spike2 downloads	Signal downloads
Spike2 version 6.04	Signal version 3.09
Spike2 version 5.18	Signal version 2.16
Spike2 demo	Signal demo

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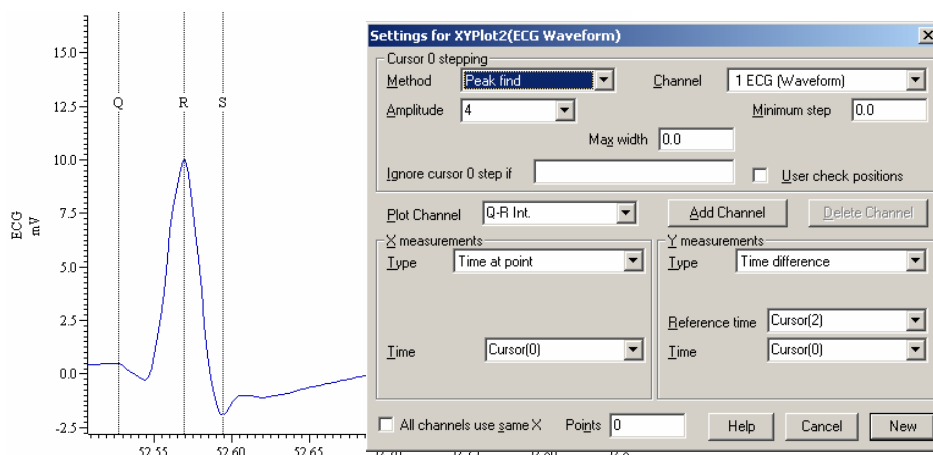




- Q. I have now spent some time with Active Cursors after reading the last eNewsletter and can detect the features of interest in my recorded ECG trace. Now I would like to start taking measurements based on my feature detection.
- A. Spike2 can generate automated measurements on or off-line based on cursors positioned by the results of feature detection as demonstrated in the previous eNewsletter (click [here to view eNewsletter #28](#) on our website). There are two ways of taking automated measurements in Spike2. They can be aligned in time with the raw data by plotting results to new channels in the file, or they can be plotted to a separate XY scatter view. An XY view can process multiple measurement channels simultaneously and the results can be easily exported to spreadsheet programs using the Copy as Text command from the Edit menu.

Having already set-up our Active Cursors in our ECG trace in the previous [eNewsletter](#), we could now use the Measurements - XY view function from the Analysis menu to automatically step Cursor 0 through the data finding every R-wave peak and updating the position of the other Cursors in response. Measurements such as mean waveform value, slope and time difference, as well as many others, can then be taken at every step and the results plotted to the XY view.

The example below is set up to process a measurement of the Q-R interval based on the cursor positions in our example ECG data. The Settings dialog includes a section that defines the stepping mode for Cursor 0 (which uses the current Active Mode for the cursor if one is already set) as well as the type and time of each X and Y measurement value.

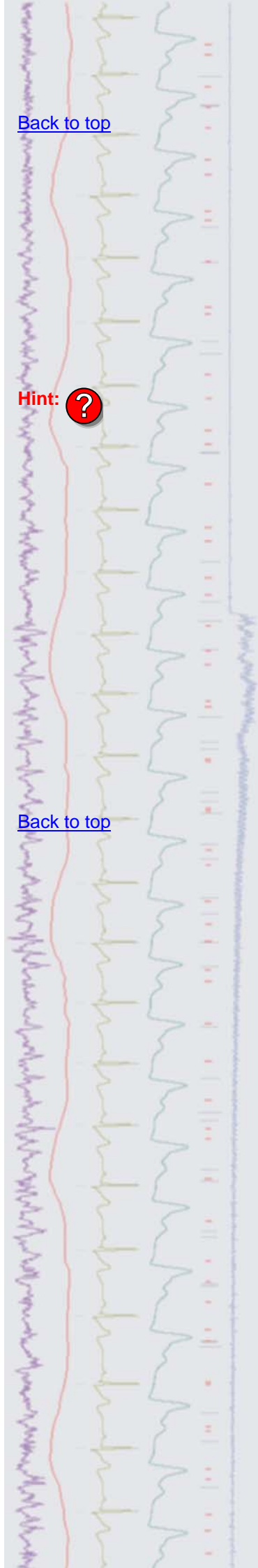


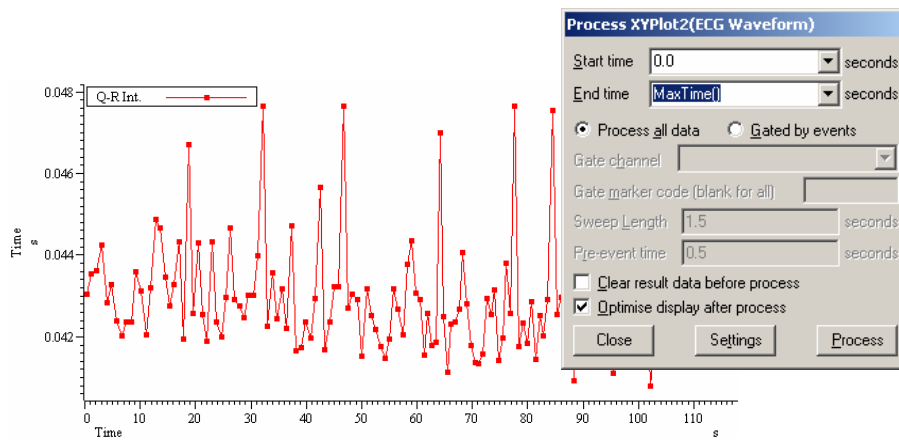
You can define the titles for the Plot Channel as above by simply editing the text in the dialog field. Our X Measurement takes the time at point of Cursor 0 for each step (the time at which each R wave occurs in the data file). Our Y measurement takes the time difference between Cursor 2 (Q wave) and Cursor 0 (R wave) for every step through the data. Pressing New creates the XY view and opens a new dialog that sets the time range in the source data from which to take measurements. Taking measurements from 0 to the maximum time (MaxTime()) in our source file gives the plot below.

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Hint: ?

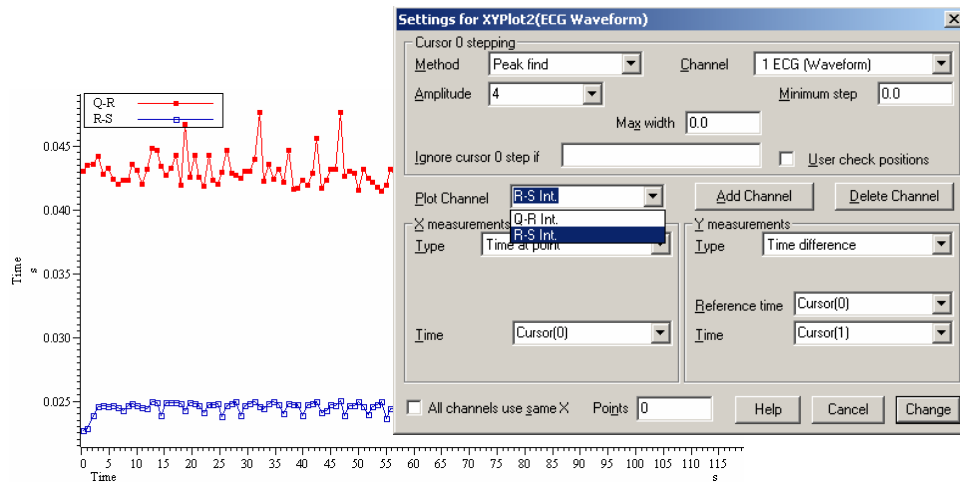
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Trend plot of Q-R Interval processed from 0 to MaxTime()

By right-clicking on the trend plot we can make changes to the settings and add a second Plot Channel that will measure the time difference between Cursor 0 (R wave) and Cursor 1 (S wave) for every sweep, as below.

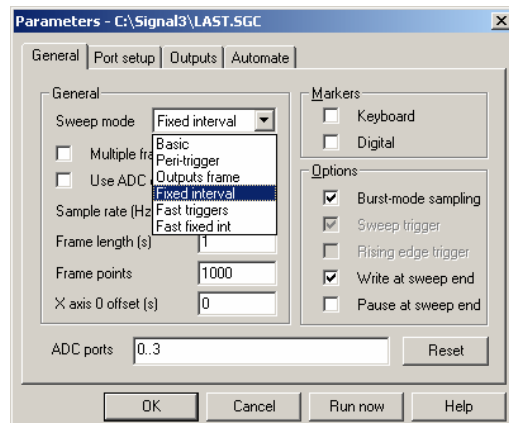


XY plot containing the results of 2 separate measurements

XY views can contain up to 256 Plot Channels holding the results of different measurements. For more information on using the measurement functions in Spike2, see the manual or on-line help.

Signal

- Q. I would like to be able to introduce random intervals of 5 to 10 seconds between sampling sweeps. Would this require a script?
- A. This functionality is already available in Signal when using Fixed Interval sweep mode, which can be selected from the General tab of the sampling configuration. The parameters to determine the intervals between sweeps are then set within the Pulses configuration dialog, which can be found in the Outputs tab of the sampling configuration. With Fixed Interval mode selected, two additional fields are enabled in the dialog, one to set the default interval between sweeps and a Vary % field that can be used to add a random variation to the interval time.



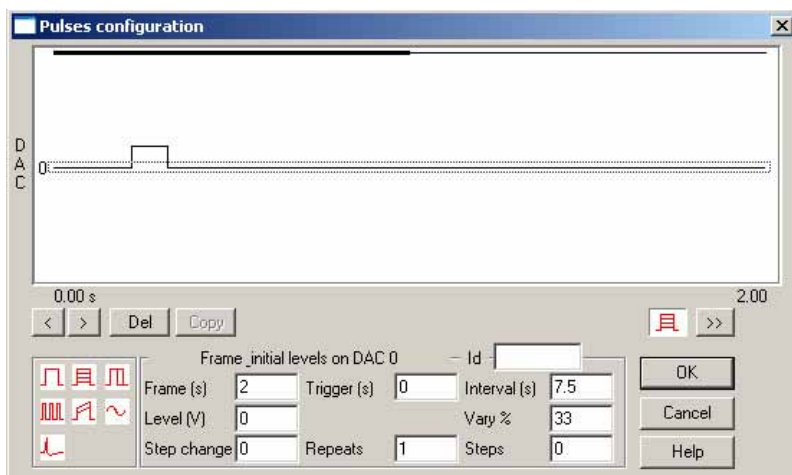
Fixed Interval sweep mode selection

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Hint: ?



For this example, an Interval setting of 7.5 (s) and a Vary % setting of 33 would give a random interval of 5 to 10 seconds between each sampled sweep as 33% of 7.5 is 2.5, giving a random time from 7.5-2.5 to 7.5+2.5 seconds.

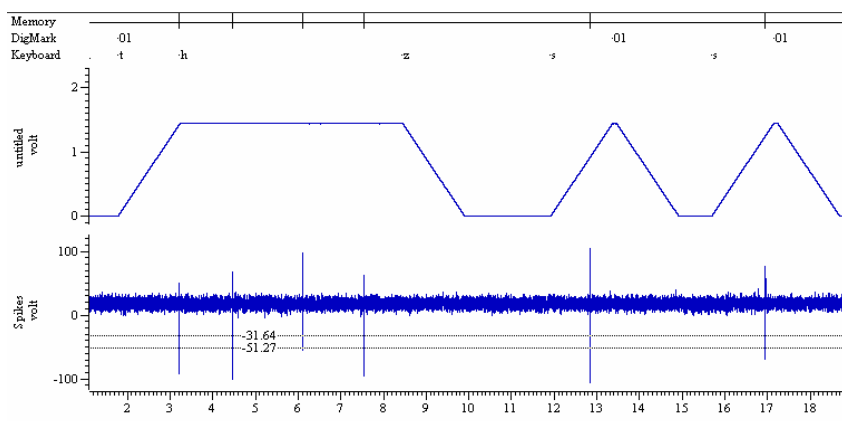


Pulse configuration dialog when using Fixed Interval mode

Scripts: Spike2 

- Q. I will be using a mechanical stimulator, controlled by a voltage ramp, to evoke a response from my skin-nerve prep. I know that I can use the output sequencer to generate the ramp, but I would like to also like to be able to set the maximum ramp threshold once a certain number of spikes have been evoked and then use this ramp threshold level for the rest of the experiment. Is there a script or sequence available that would give me this kind of on-line control?
- A. The attached script, RampThresh.s2s and the associated sequence file, RampThreshSeq.pls, demonstrates a method of updating stimulus parameters in response to activity on a waveform channel. In this example a voltage ramp is used to drive a stimulator while a selected channel is monitored for spike activity. The threshold for spike detection is defined by the amplitude difference between horizontal cursors that are positioned by the user on the selected spike data channel. Once the script has detected a pre-defined number of spikes, it stops the ramp and sets the amplitude level of the ramp at that time as the upper limit for the ramp stimulus for the rest of the experiment.

For testing purposes, connect DAC 0 to ADC port 0 on the 1401 and set up a suitable sampling configuration to visualize the ramp behaviour and load the sequence file into the configuration before running the script. The script generates a toolbar that is used to control sampling and set spike monitoring parameters. The toolbar buttons and dialog fields contain tooltips that explain their functions when you 'hover' the mouse pointer over them. The Get Threshold button is enabled once sampling has started and is used to generate ramp output and monitor the spike channel for activity. Once the set number of spikes has occurred, the ramp is halted. Once the upper limit for the ramp has been defined in this way, the Stimulate button can be used to repeat the ramp stimulus for the remainder of the experiment.

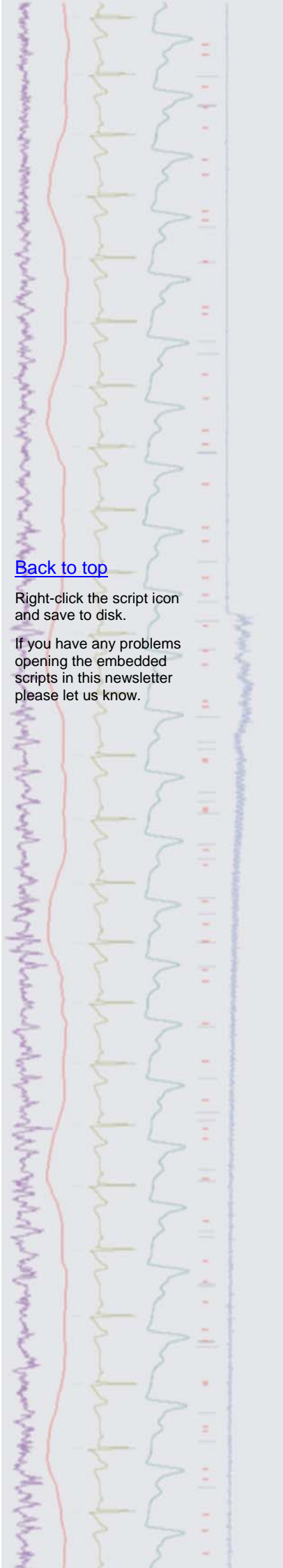


Threshold ramp halted by a single detected spike, followed by two rapid stimulus ramps that then use the same amplitude level

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Right-click the script icon and save to disk.

If you have any problems opening the embedded scripts in this newsletter please let us know.



Scripts: Signal

- Q. Is it possible to increase or decrease the sample rate in a Signal data file once recorded? I have inadvertently recorded data files using a colleagues sampling configuration, and would like to change the sample rate to match my previously recorded files
- A. The attached script, `ReSample.sgs`, can be used to interpolate a Signal data file to increase or decrease the number of points and hence the sample rate using cubic splining. The script creates a new copy of the file with the selected re-sample factor.

Did you know...?

The channel numbers in a Spike2 data file are now displayed in red if a waveform channel is modified by a channel process (rectification, smoothing etc.) or a marker channel has a marker filter applied.

Recent questions

- Q. Is there any way to display the current time into sampling in a separate window or toolbar, rather than just on the right hand edge of the X-axis?
- A. The attached script, `SampleTime.s2s`, creates a 'stopwatch' timer in the script toolbar that starts when sampling begins, and displays the time elapsed in hours, minutes and seconds. This allows the user to examine previous sections of data in the file, while still being able to note the current time elapsed since sampling began.

User group

If you have any comments about the newsletter format and content, or wish to unsubscribe from the mailing list for this newsletter, please notify sales@ced.co.uk.

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