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Join us in Cambridge on June 5th - 6th for our annual training days and learn how to use Spike2 and Signal more efficiently to customise and streamline your analysis. [Register](#) on our website to reserve your place on the appropriate course.

[Future meetings and events](#)

[Cambridge Neuroscience Symposium 2014](#)

Department of Engineering Lecture Theatre
University of Cambridge
Cambridge
UK
March 14th 2014

[Experimental Biology 2014](#)

San Diego Convention Center
San Diego, CA
USA
April 26th – 30th 2014

[CED European Training Days 2014](#)

St. John's Innovation Centre
Cambridge,
UK
June 5th – 6th 2014

[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	Released	Signal	Released
Spike2 version 8.01c	03/14	Signal version 6	12/13
Spike2 version 7.13	02/14	Signal version 5.10	02/14
Spike2 version 6.17	10/12	Signal version 4.11	02/14
Spike2 demo	12/13	Signal demo	12/13



Scripts Spotlight

You will often come across situations where you want to test the output of a single script command or short code combination, but don't want include them in your main script and then have to step through these test functions, or have to open a new separate script file just for testing. For this scenario, Spike2 and Signal provide the Evaluate window.

From the `Script` menu `Evaluate` command, or by using the `Ctrl+L` keyboard shortcut, you can open the `Evaluate` dialog which lets you type a line of script commands for immediate execution, making it very useful for testing purposes. The `Execute` button will execute the line entered, The `Eval(...)` button will run an `Eval()` command on the script you have entered and show the result below the input field. You can execute any number of script commands that can be typed in one line and include variable declarations as well.

The logo for Spike2, featuring the word "Spike2" in a stylized, cursive font with a red-to-yellow gradient and a drop shadow effect.

- Q. Is it possible to record certain data channels at intervals in Spike2? I have some channels that only need recording in response to trigger events, alongside my continuous data.
- A. Spike2 is generally used to record data continuously to a file, but can also record data in Timed or Triggered mode to only save data to a file in intervals.

From the `Mode` tab of the sampling configuration you can select the mode to use. `Continuous` mode records data continuously to a file, and is the default setting in any new Sampling configuration.

In `Timed` mode data is saved to the file at intervals set by the `For` and `Every` fields in the dialog. `For` sets the period for which data is saved to disk and `Every` sets how often to save.

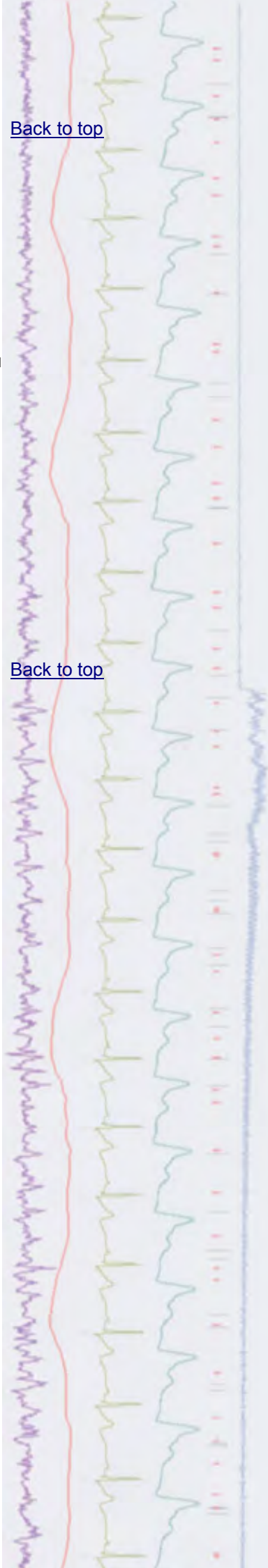
In `Triggered` mode you can set up to four triggers, each with an associated channel list, to control when data is saved to disk and on which particular channels. Any channel not associated with a trigger is recorded continuously.

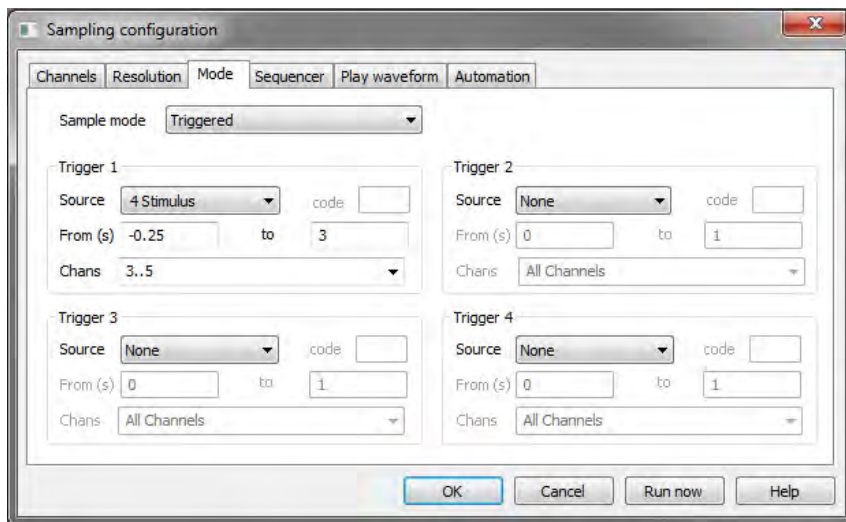
The `Source` field sets the trigger channel to use. This can be any event, marker or `WaveMark` channel in the sampling configuration. If the trigger source has an associated marker code, you can choose to trigger only if the first marker code matches the setting you enter in the `Code` field.

`From` and `To` set the start and end of the area to record to disk in response to the trigger. You can use negative values to record pre-trigger times if required.

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Triggered sampling mode settings

From the Channels drop down list you can either select All Channels, or type in a list of channels, for example 1..4,6,8 for channels 1,2,3,4, 6 and 8. The channels selected here are the ones written to disk in response to the trigger event.

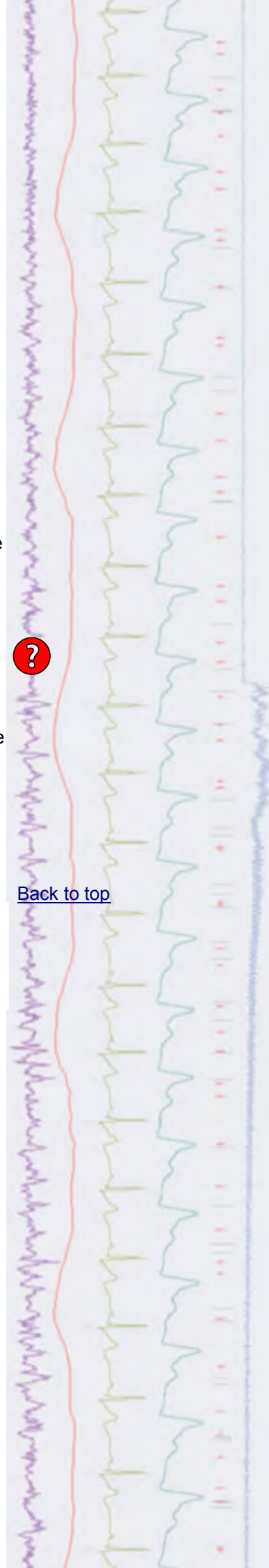
If you are sampling to a 64-bit file in Version 8, triggered or timed channels will save only the data implied by the timing or the trigger, as you would expect. 32-bit files can only save complete blocks of waveform data and each block is around 16000 data samples. If you select a 32-bit file output file or are using an older version of Spike2, you will always save at least the data implied by the trigger or timing, but with waveform channels you will usually get more data than asked for. Further, if your triggers or timing periods are closer together than 16000 data points, you will save continuous data.



Scripts: Spike2

- Q. I record and analyse local field potentials and am interested in area under the curve measurements. In the Spike2 help it says that the curve area type measures the area above a straight line that joins the start and end data points. Is there any way I can show this line to see the actual area being measured?
- A. The script [CurveAreaDisplay.s2s](#) allows the user to position cursors around the feature of interest and then displays the area which is used for the curve area measurement in a separate window when the user clicks OK in the toolbar. The curve area measurement value is also displayed in the Log window. This script requires Spike2 version 7 or later.

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Signal



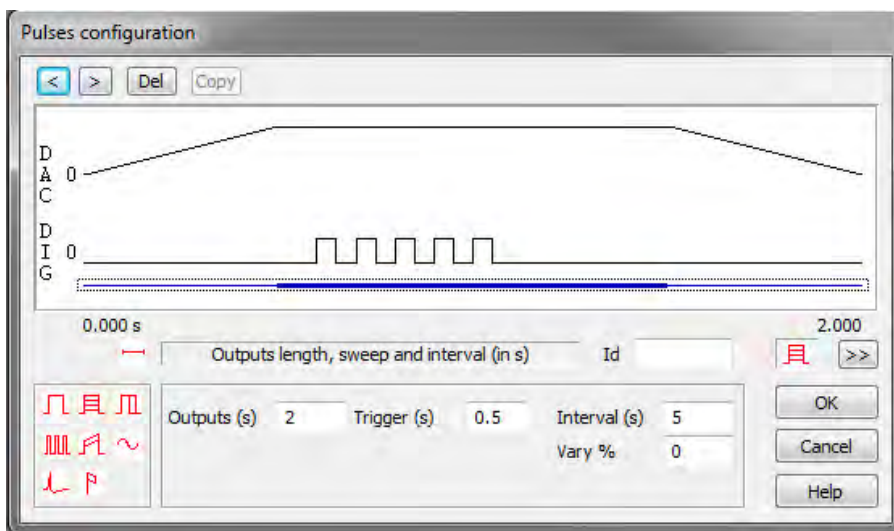
Show me How!

Click here to watch a video on fixed interval sampling in Signal

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- Q. I am trying to setup fixed interval sampling in Signal and have set the frame length to 1s in the General page of the sampling configuration. In the Pulses configuration dialog where I set the interval between frames there is another setting for `Frame(s)`. Should this be set to the same Frame length?
- A. The `General` tab of the Sampling Configuration sets the basic information used for sampling, such as the sample rate, frame length and channels to record. The sample rate is used for all waveform channels which are defined in the `ADC ports` field. The `Sweep mode` drop-down defines the mode of sampling.

In Fixed interval sampling mode, sweeps are internally timed so that they occur at the specified interval; a random variation in the interval can optionally be provided. Both the sweep interval and any required random variation are set using the pulses configuration dialog that is used to define the outputs. Because these values can vary with the state in multiple states sampling, they are set in the pulse outputs dialog for convenience.



Fixed interval mode with output frame of 2s and a 1s sampling sweep that starts after 0.5s

When using Fixed interval mode, the pulse outputs can be any length greater than or equal to the sampling sweep and the sampling sweep starts at a defined point within the pulse outputs.

The outputs length and sweep time parameters are shown when the control track is selected. In Signal version 6.01, the `Frame` parameter has been renamed `Outputs` to make the distinction between outputs frame and sampling frame clearer, as this sets the length of the outputs frame, not the length of the sampled frame. The outputs frame must be at least as long as the sampling sweep.

The `Trigger` parameter sets the time, relative to the start of the pulse outputs, of the start of the sampling sweep. The `Interval (s)`, and `Vary (%)` fields set the timed interval between output frames (which cannot be less than the pulse output frame length) and the percentage random variation in the interval, from 0 to 100, for the selected state. The interval, with any variation should be greater than the outputs sweep by at least 100ms to give Signal time to set up



the next sweep.

If you don't need pulse outputs occurring outside the sampled sweep you should set Frame(s) to match the Frame length setting in the General tab, set Trigger(s) to 0 and then set your interval of optional variation of choice.

Scripts: **Signal**

- Q. Is it possible to add some kind of marker channel to a frame that shows the frame state? I know that the state for the current frame is shown in the status bar but I want to copy some of the frames as images for use in publications and would like to show which state was used on the data itself.
- A. The script, [StateMarker.sgs](#) is an example script that demonstrates the new memory channels available in Signal version 6. The script creates a new memory channel in a data file holding a marker which corresponds to the state of the current frame.

Did you know...?

You can set user-defined labels for vertical cursors in Spike2 and Signal from the **Cursor** menu **Label mode > Set Label** option or by right-clicking on the cursor and selecting **Cursor n > Set Label** from the context menu, where *n* is the cursor number.

Recent Questions

- Q. I am using Signal to record evoked response data and would like to pause the experiment every 10 frames to adjust stimulus intensity and some other settings.
- A. You can set-up Signal to automatically stop sampling after reaching a certain number of frames. From the **Automate** tab in the Sampling configuration you can set the required field for Number of frames, Sampling duration or File size in the **Sampling limits** section. For this example you would set **Number of frames** to 10 and enable the checkbox to set a 10 frame limit on sampling. Once 10 frames have been recorded, sampling will stop, allowing you to adjust your stimulus or other experimental conditions. Each time you click the **More** button in the sampling control toolbar, sampling will continue for another 10 frames before stopping again.

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