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News

US Training Days: Thursday 11th and Friday 12th October

These training days will take place at the [DoubleTree by Hilton New Orleans, 300 Canal Street, New Orleans](#) just prior to the Society for Neuroscience meeting in New Orleans. The days are suitable for both existing and prospective users so join us and learn how to make the most of Spike2 and Signal for your individual data acquisition and analysis requirements.

Attendance is limited so please [register](#) early to reserve your place on the appropriate course.

Future meetings and events

2012 UCL Neuroscience Symposium

University College London,
London, UK
June 29th 2012

Physiology 2012

Edinburgh International Conference Centre,
Edinburgh, UK
July 2nd – 5th 2012

8th FENS Forum of Neuroscience 2012

International Convention Center (CCIB),
Barcelona, Spain
July 14th – 18th 2012

ISEK 2012

Brisbane Convention and Exhibition Centre,
Brisbane, Australia
July 19th – 21st 2012

International Motoneuron Meeting 2012

Crowne Plaza Hotel Coogee,
Sydney, Australia
July 23rd – 26th 2012

Society for Neuroscience 2012

Ernest N Morial Convention Center,
New Orleans, LA, USA
October 13th - 17th 2012

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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	Released	Signal downloads	Released
Spike2 version 7.10	05/12	Signal version 5.06	05/12
Spike2 version 6.16	03/11	Signal version 4.09	08/11
Spike2 demo	05/12	Signal demo	05/12

Scripts Spotlight

There are times, as a script writer, that you will want to re-use some of your user-defined procedures and functions in multiple script projects. Of course, you can do this by simply copying and pasting the code but it can be much more convenient to use the `#include` command, which is available in Spike2 version 6.03 and higher. This command lets you access procedures and functions in other script files from within your current project. Simply use the following syntax in your script:

```
#include "filename"
```

where filename is either an absolute pathname ("C:\scripts\MyFuncs.s2s") or a filename enclosed with angle brackets (<MyFuncs.s2s>). If you only provide a filename the script expects the script file you want to include to either reside in the same folder as the original script, in the current folder or in the Spike\include folder. It is usually a good idea to have all of your `#include` commands at the start of your script so that anyone else who reads it understands that other script files are being used.

Many of the scripts in your Spike\scripts folder make use of `#include` to read functions from a script file called `GHutils.s2s`. This file contains a number of useful functions that I utilise on a regular basis and can be found in your Spike\include folder. Another useful script called `seqlib.s2s` can also be found here. This script contains a library of functions to help calculate sequencer variable values.



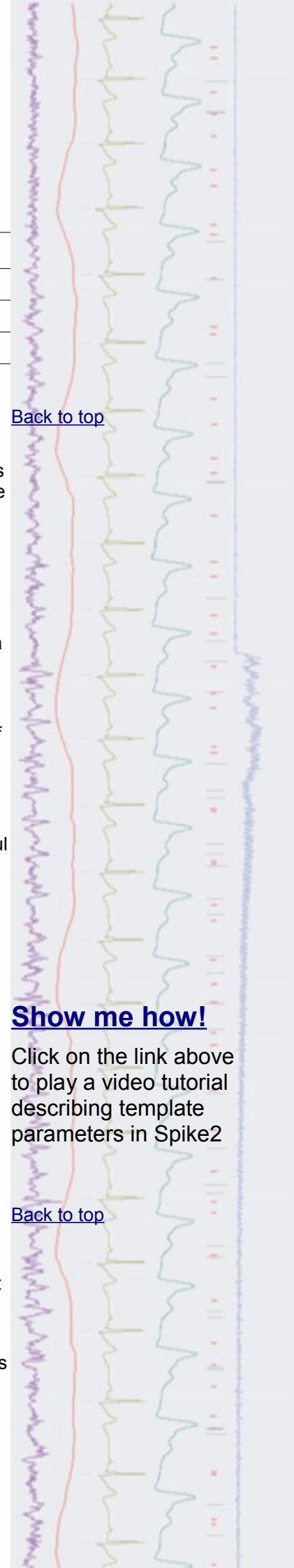
- Q. I have recently started using Spike2 for spike detection and found the video in the previous eNewsletter very helpful for it's description of the do's and don'ts of setting trigger levels. Now I'm looking at how my templates are being created and the settings I can use to define them. Can you tell me more about the Template parameter settings and how they work?
- A. There are a number of parameters used to define how spike templates are formed and how incoming spikes are matched to templates. These parameters can be modified using the Template Parameters dialog which is available from a toolbar button in the spike shape window as indicated below.

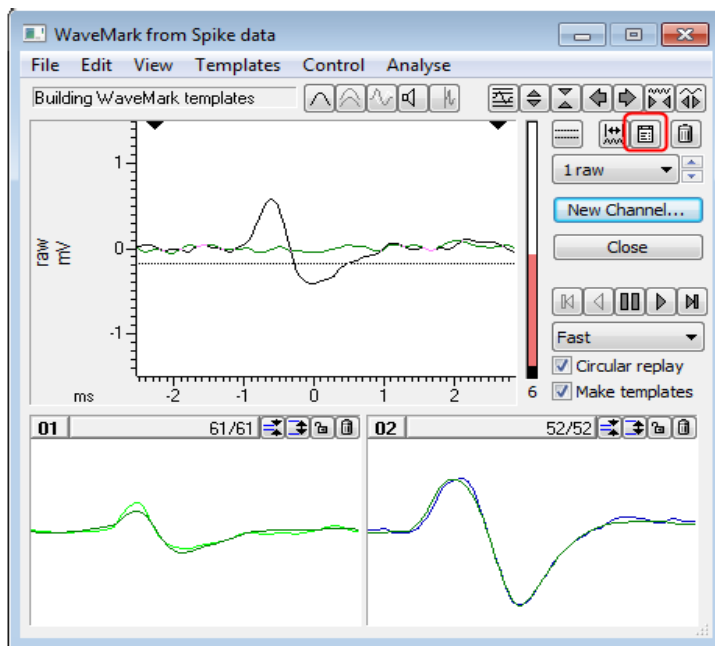
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Show me how!

Click on the link above to play a video tutorial describing template parameters in Spike2

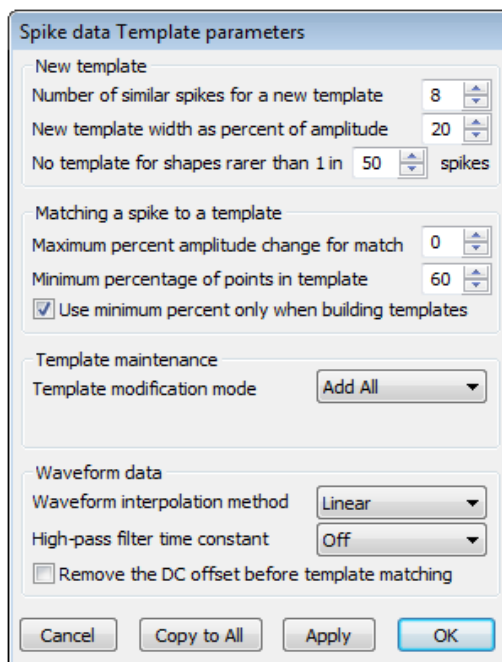
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Spike shape window

The parameters dialog includes four areas that provide settings for creation of new templates, matching incoming spike data to templates, template modification and controls for processing the raw waveform data into spikes.



Template parameters

New template

This section controls the creation of new templates. The *Number of spikes for a new template* field is used to set the number of spikes required for a provisional template to be promoted to a confirmed template. The initial template width is determined by the *New template width as a percentage of amplitude* field. As spikes are added to a template, the template width changes to represent the amplitude variation of the spikes.

The *No template for shapes rarer than 1 in N spikes* can be used to ignore provisional templates that are created from threshold crossings that do not match any spike shapes in n number of detected spikes. This can prevent templates being created for random noise or artefacts that cross the spike trigger thresholds. It also decrements the provisional template counts if no



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spikes are added within the specified number, allowing the provisional templates under consideration to be kept to the minimum amount.

Matching a spike to a template

The fields in this section determine how incoming spikes are matched to existing templates. Using the *Maximum percent amplitude change for a match* field, Spike2 can scale every incoming spike up or down by this value so that the area under the spike matches the area under the target template. This setting can be very useful if you have spikes that maintain their shape but change amplitude during recording.

The *Minimum percentage of points in template* field sets the percentage of the spike data points that must fit in the template to confirm a match. The final option can be used to specify that the *Minimum percentage of points...* setting is only used when building templates. If this option is checked then the number of points in the template are ignored and spikes are matched to the template with the smallest error between the mean template and the spike.

Template maintenance

This group determines how the shape of a template changes over time as more spikes are added to it. The *Template modification mode* setting has three options available from the drop-down list. *Add All* will add all spikes that match the template, modifying the template accordingly to represent the amplitude variation of each spike. *Auto Fix* lets you fix, or 'lock' the template once a set number of spikes has been added. If you have several similar spikes, using this mode to lock templates after a small number of spikes can stop a template gradually changing shape and becoming the same as another template. *Track* mode sets the template shape to track the incoming spikes. This mode is only useful for slow changes in spike shapes as, with fast changes, it is likely that templates will merge together.

Waveform data

This final group of settings controls how the raw waveform data is processed for spike sorting. *Waveform interpolation method* sets how the spike waveforms are aligned with templates using linear, parabolic or cubic spline interpolation. For on-line sorting, linear interpolation is always used for efficiency.

If your spike waveforms show baseline drift you can use the *High-pass filter time constant* to remove slow changes in the baseline. If your waveform shows fast transient baseline changes a *Remove the DC offset* option is also available.

Scripts: Spike2

- Q. Is it possible to detect peaks in a result view? I would like to generate a PSTH and then mark the first peak above mean baseline + two standard deviations after the trigger time.
- A. The script, `PSTH peak detect.s2s`, allows the user to generate a PSTH and then automatically detects the first peak after the trigger time larger than baseline mean plus a number of Standard Deviations. It then measures peak amplitude and latency and prints these values to the Log window. You can set how many consecutive bins must be above the threshold to define a peak in the settings dialog generated by the script.

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Right-click the script icon and save to disk.

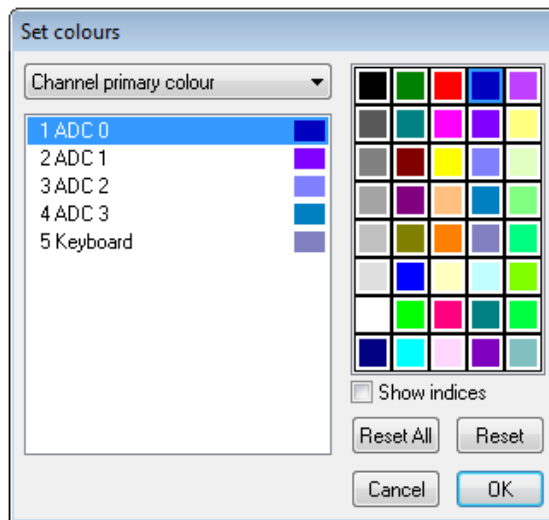
If you have any problems opening the embedded files in this newsletter please let us know



Signal

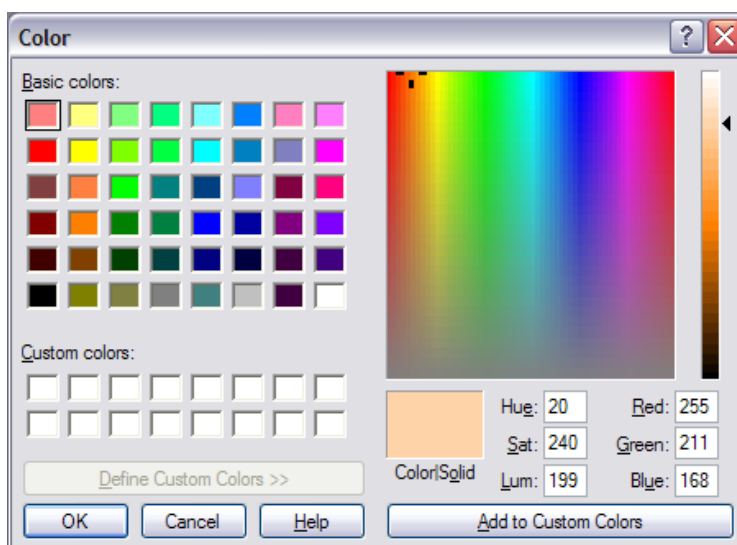
- Q. Is it possible to set-up different channels in a data file so that they are displayed in different colours?
- A. Signal supports individual colour settings for data, channels and views. Click on the colour palette icon in the main toolbar or select *Change colours...* from the *View* menu to access the *Set colours* dialog.

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Set colours dialog

With a data file open, the *Set colours* dialog will display a list of the channels in the file. The drop-down menu can then be used to select the different channel elements such as primary, secondary and background colour for the listed channels. Click on the name of the channel you want to change and then click a colour in the palette to apply it to the selected channel element.



Set custom colours

The available colours in the palette can be changed by double clicking on a colour. This opens a new dialog where you can select Basic colours to add to the palette or define your own Custom colours with user-definable settings for



Hue, Saturation, Luminescence or RGB ratio.

Channel colour settings are stored in the resource file that is associated with the data file. Resource files have the same name as the data file and are stored in the same location with the extension .sgr. You can apply colour settings from one file to other data files using the File menu Resource Files > Apply Resource Files... option.

Scripts: Signal

- Q. Can I set a data file to only display frames of a given state? For example, I want to review all frames of state 1 while paging through a file, without having to scroll through frames of all other states.
- A. The script, `StateDisplay.sgs`, allows you to set a state to display and then page through the file using the associated script toolbar buttons to only show frames of the selected state.

Did you know...?

You can record events or triggers as digital markers in Signal using the checkbox option in the General tab of the sampling configuration. You could use this to log the times of a pulse from a stimulator, for example. Digital markers are read from the digital input port on the rear of the 1401.

Recent Questions

- Q. Is there anyway to log data from additional devices (for example, a motion tracking system) alongside the data I am recording with Spike2 and my 1401?
- A. Spike2 supports the use of Talker interfaces which can be used to read data from external devices. Talkers are custom software modules that act as an interface between 3rd party data capture devices and Spike2. The output from supported devices can be added as additional channels to the same file being recorded using a 1401 interface. As an example, consider a motion tracking system that outputs co-ordinate values to a PC via a suitable connection, for example, an ethernet connection. This output could be added automatically to a sampling Spike2 file by writing a Talker interface.

Four example Talkers are included with Spike2. To install these, along with documentation describing how to write your own custom modules, select the Custom setup option during installation of Spike2 and check the Talker documentation option. Channels from Talker modules are added to the sampling configuration from the drop-down menu next to the New button.

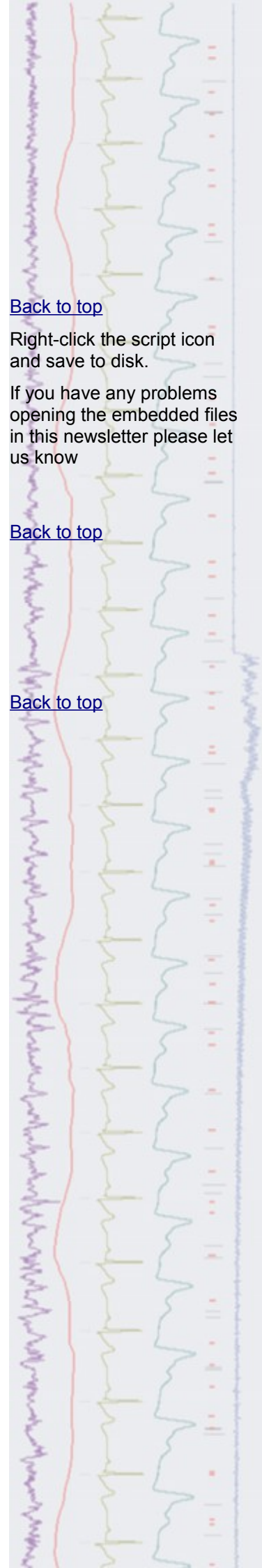
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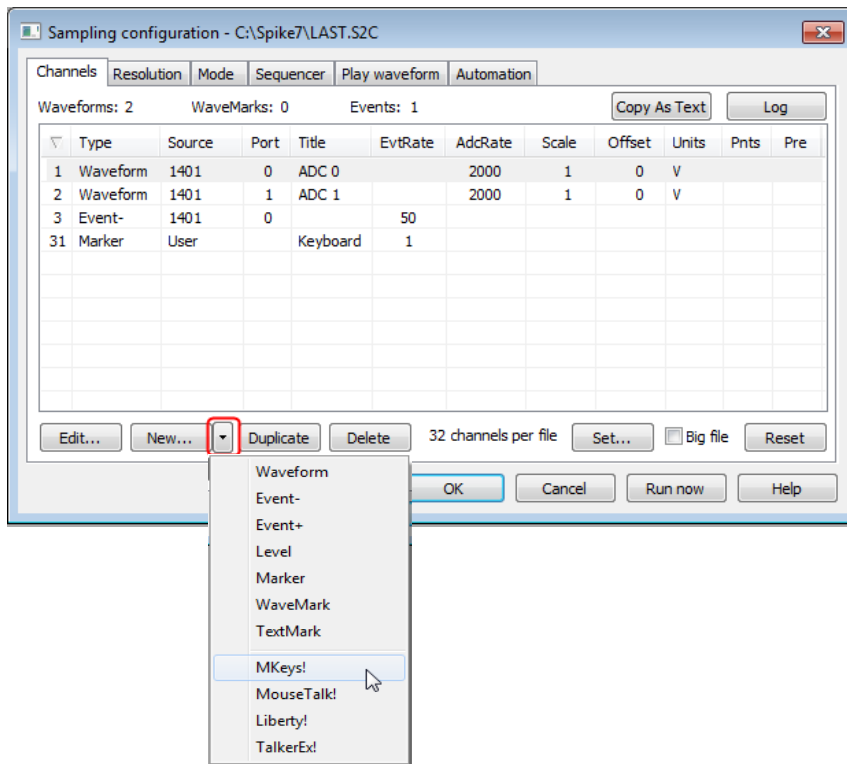
Right-click the script icon and save to disk.

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Sampling configuration showing installed Talker interfaces

We happily provide the information to enable manufacturers of other data capture devices to produce their own Talker modules, but do feel free to contact us if you have a particular device that you would like to interface with Spike2.

User group

Try the [CED Forums](#) bulletin board for software and hardware support

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.

