

Contents

- [News](#) – Updates & meetings
- [Spike2](#) – Fitting a Gabor function
- [Signal](#) – Introduction to multiple states
- [Spike2 Script](#) – Artefact removal
- [Signal Script](#) – Simple channel arithmetic
- [Did you know...?](#) – Filter banks
- [Recent questions](#) – Detect half-height of spikes

News

Spike2 and Signal Training Days

This years U.K. Spike2 and Signal training courses are fast approaching and will take place on Thursday 30th April and Friday 1st of May in Cambridge. Places are filling up quickly so 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.

Training Days in China

We will also be running our first Chinese training days in Shanghai during the week beginning the 6th of April. These training days will be run in association with Qichi Instruments, distributors of CED equipment in China. For further information please contact Mr. Ryan Huang at ryan@qichi-instruments.com

Meetings and events

Biophysical Society Annual Meeting

Boston Convention and Exhibition Center
Boston, MA, USA
March 1st – 3rd 2009

16th Annual Meeting of the Cognitive Neuroscience Society

Hyatt Regency San Francisco
San Francisco, CA, USA
March 21st – 24th 2009

German Neuroscience Society

Goettingen Exhibition Centre
Goettingen, Germany
March 26th – 29th 2009



Experimental Biology 2009

Ernest N. Morial Convention Center
New Orleans, LA, USA
April 18th – 22nd 2009

British Neuroscience Association 20th National Meeting

Adelphi Hotel
Liverpool, UK
April 19th – 22nd 2009

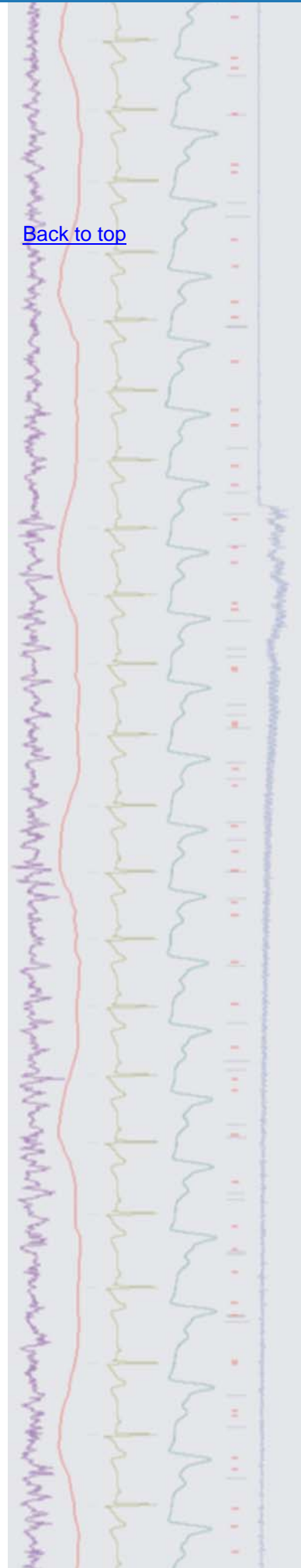
INTERNATIONAL WORKSHOP AND CONFERENCE
ON HUMAN REFLEXES
WIRING AND FIRING OF MOTONEURONES



International Workshop and Conference on Human Reflexes: Wiring and Firing of Motorneurons

Ege University
Izmir, Turkey
May 11th – 15th 2009

[Back to top](#)





[The 6th Congress of the International Society for Autonomic Neuroscience](#)

ISAN09 is a joint meeting to be held with the European Federation of Autonomic Societies (EFAS) in Sydney, from September 1st-4th, 2009. Approx. 400 international and national delegates are expected, having clinical and/or basic scientific research interests in autonomic neuroscience.

Plenary speakers: Darwin Berg (UCSD), Hugo Critchley (University of Sussex), Max Hiltz (University of Erlangen-Nuremberg) and Elspeth McLachlan (POWRI)

Further details of the meeting can be found at <http://www.iceaustralia.com/isan2009/>

Proudly supported by Cambridge Electronic Design and the Foundation for High Blood Pressure Research, Australia.

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 6.10	Signal version 4.04
Spike2 version 5.20	Signal version 3.11
Spike2 demo	Signal demo



- Q. I am using Spike2 to record multi-unit spike activity and generate auto-correlograms with the intention of investigating oscillating neuronal activity. This has been done in the past by fitting a Gabor function to auto-correlogram data. Is it possible to fit a Gabor function in Spike2?
- A. The attached script, `GaborFit.s2s` is an example of curve-fitting by non-linear regression. The Gabor function used is a sine wave damped by a Gaussian function. The script allows the user to generate suitable test data and select result view files for fitting.

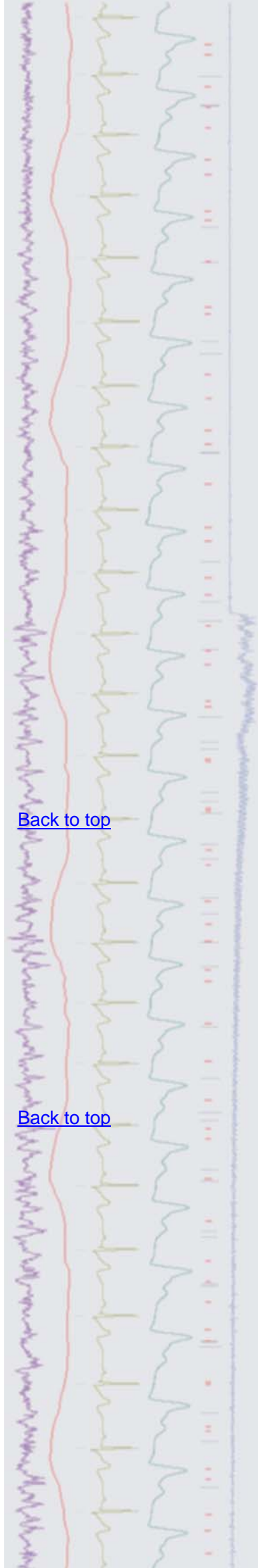
Signal

- Q. I've been told by a colleague that Signal has a built-in system of controlling multiple stimulus protocols during an experiment. For instance, applying a set of five different paired stimulus pulses in a random order. Can you give me any further information on using Signal in this way?
- A. Multiple states sampling is one of the most powerful features in Signal. It is widely used in TMS, evoked response and patch and voltage clamp studies where it is common to setup a number of different sets of output pulses for use during an experiment and switch between these outputs during sampling.

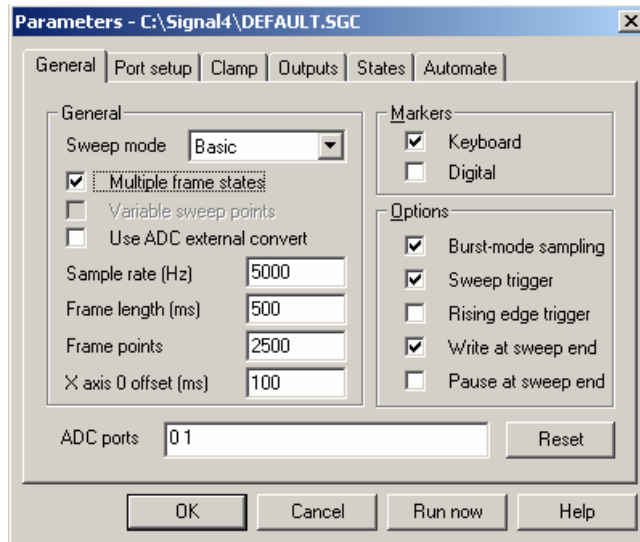
As an example, you could set up one state that generates a single stimulation pulse on a DAC output, another state that has two stimulation pulses separated by 20 milliseconds and a third state containing a pulse train consisting of 10 pulses at 20Hz. Signal can then switch between these outputs randomly or in a preset order during sampling. Every sampled frame stores the state number that was used for that particular sweep, allowing analysis of responses to a particular set or combination of stimulus outputs. This is called Dynamic Outputs mode and

[Back to top](#)

[Back to top](#)

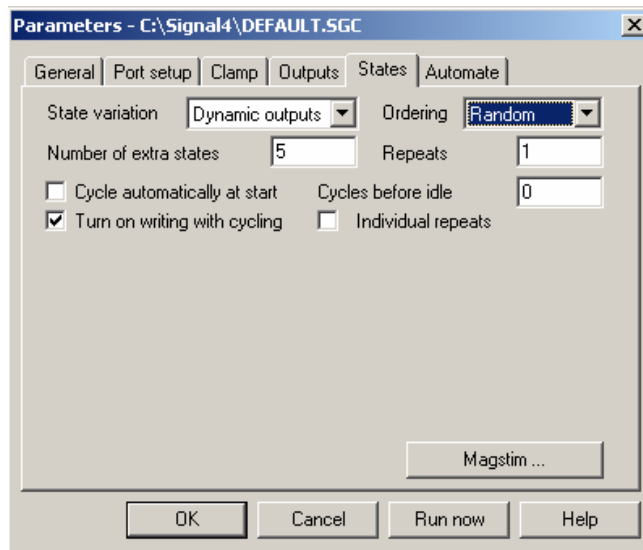


is the most useful and general-purpose way of using multiple states during sampling.



Signal sampling configuration

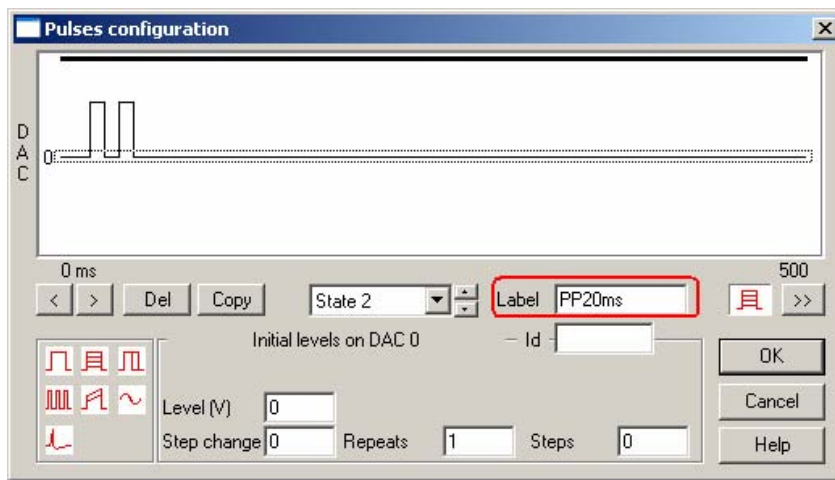
Multiple states are enabled by selecting the Multiple frame states checkbox in the General tab of the sampling configuration. Once enabled, a States tab is added to the configuration from where the mode, number of extra states (state 0 is always available as the default sampling state) and ordering during the experiment can be defined. Signal can switch between states in numeric or random order during an experiment, or run multiple user-defined protocols for state sequencing.



States configuration tab

The outputs generated by the different states are set-up in the pulses configuration dialog, available in the Outputs tab of the sampling configuration. States can be selected from the drop-down list in the pulses configuration dialog and pulses are added to the frame of outputs by clicking and dragging pulses from the palette to the output 'tracks' in the graphical display.





Pulses configuration dialog

When sampling with multiple states Signal provides a States control toolbar to display the current state and allow manual or automated control of the state sequencing during the experiment.



States control toolbar

The next edition of the eNewsletter will give examples of using multiple states for clamping experiments and MagStim control in TMS studies.

Scripts: Spike2 

- Q. I have been using the artefact removal script (ArtRem.s2s) from the website and would like to use it on some imported data files. Unfortunately these files have been imported as RealWave data and the script expects waveforms. Is there any way to run the artefact removal on RealWave channels?
- A. The attached script, `ArtRemOverlay.s2s`, is an updated version of the `ArtRem.s2s` script, and now removes artefacts from both waveform and RealWave channels. The new version creates a duplicate of the original view with the sections of data around the selected trigger overdrawn, allowing the user to see all of the artefacts together. The main dialog is now interactive with cursors in the overdraw view to select the data area for removal. This script requires Spike2 version 6 as it makes use of the overdraw display modes.

Scripts: Signal 

- Q. Is it possible to create a new channel in a Signal data file? I would like to create a new channel to hold the result of subtracting one channel from another in the original frame.
- A. The attached script, `ChanArithmetic.sgs`, is an example script to perform simple arithmetic between two waveform channels in the current frame. It creates a new file holding the original waveforms along with the result in a separate channel.

Did you know...?

Filter banks can be saved and loaded from the FIR and IIR interactive dialogs in Spike2 and Signal.

Recent questions

- Q. Is it possible to use active cursors on spiking data? I would like to find the half-height of action potentials.
- A. Active cursors can be set-up to find features such as peaks, troughs and repolarisation % on spike channels drawn as a waveform or WaveMark, in the same way as they can on continuous waveform data. For this example, we set Cursor 0 to find the peak of the spike, Cursor 1 to find the beginning of the rise



[Back to top](#)

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.

[Back to top](#)

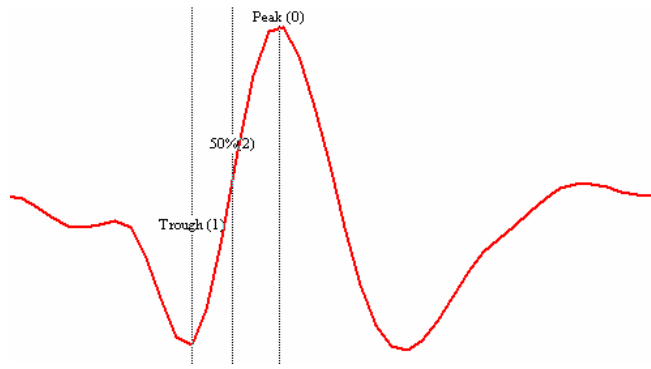
Right-click the script icon and save to disk.

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

[Back to top](#)

[Back to top](#)

and Cursor 2 to find the 50% re-polarisation between the two when the Cursor 0 position is used as the 100% value.

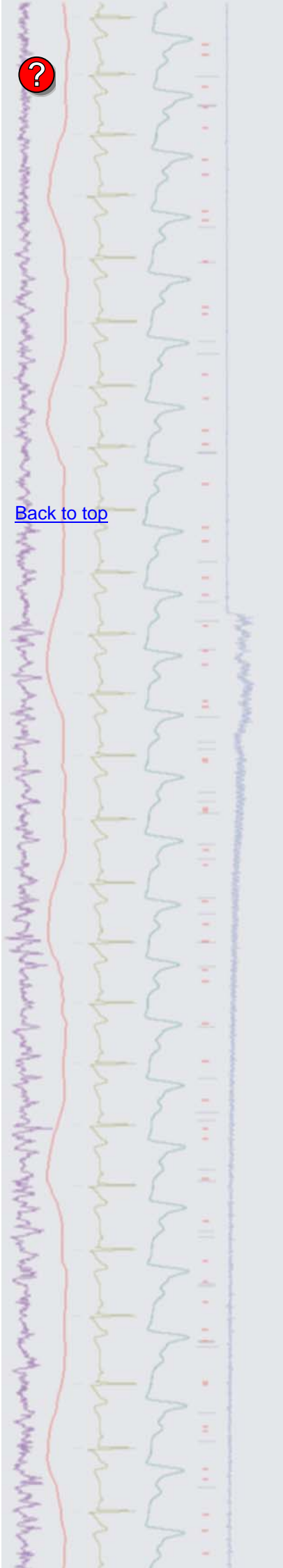


Attached is a resource file, Half-height example.s2r, holding the active cursor settings described here which can be applied to the example Extracellular spikes.smr data file in the Spike6\data directory using the Resource files option from the File menu in Spike2.

User group

Try the new [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.



[Back to top](#)