NAME

avgspfrq − calculate average spike frequencies for last spikes in burst

SYNOPSIS

avgspfrq [**−n** num] [**−c** wfnum] [**−ct** thresh] [**−s** wfnum] [**−t** thresh] [**−h** hyst] [**−d**] [**−r** start**,**end] runfile

DESCRIPTION

Avgspfrq first looks at the injected current waveform, to determine the range of samples to be analysed. It then backs off the end point (when current is turned off) by 0.2 ms, to avoid spikes that are artifacts of the current being switched off. It then analyses the intervals of the last n spikes on the spike waveform, and calculates the average.

Output will be of a form shown in this example:

FF1450551.frm: Average spike frequency (last 3 spikes from 30 to 555.6 ms): 29.6666 1894.624

where the name before the first colon is the file name, and the two numbers after the second colon are the spike frequency in Hz and the injected current (if it can be measured). The current is output in the units for which the waveform was calibrated.

It runs the *analysis*(1) program on a copy of each specified *runfile*, so the changes it makes during analysis (copying or differentiating waveforms, setting waveform parameters) will not alter any of your run files or their parameters.

Options

−n *num*
Specifies the number of spike intervals to average at the end of a burst (default is 3).

−c *wfnum*
Specifies the waveform number for the injected current waveform (default is 0).

−ct *thresh*
Specifies the current threshold for burst detection. The default action is automatic detection using the mean current level, or the cycle threshold previously set in the waveform parameters for this current waveform.

−s *wfnum*
Specifies the waveform number for the waveform containing the spikes to be measured (default is 1).

−t *thresh*
Specifies the spike threshold to be used for the waveform above, given as a differential (default is 500). If the **−d** option is used, then the spike threshold is given in whatever units the analysis program uses for displaying this waveform, but the default is stil the same.

−h *hyst*
Specifies the spike triggering hysteresis to be used for the waveform above, given as a second differential, i.e. relative to the threshold. The default is 0, for no hysteresis.

−d Specifies that spike triggering will not be on a differential waveform, and threshold above will be an actual waveform level. By default, the spike waveform is differentiated to allow triggering on a waveform with a lot of baseline shift.

−r *start***,***end*
Specifies the start and end time in the *runfile*, in milliseconds or whatever is selected as the current time units in the runfile's analysis parameters. This overrides the range determined by detecting a current burst in the injected current waveform.

−r mult
Specifies that multiple bursts of current will be looked at on the injected current waveform, and each burst will be processed and reported.

−r *start*,*end*,**mult**
Specifies the start and end of the analysis range, and specifies that multiple bursts in that range will be analysed.

−−help
Causes the program to output a summary of command usage and options.

EXAMPLES

avgspfrq −s 2 −c 1 FF1740521
Simple case using mostly defaults. The FF1740521 in the command line is the runfile analysed, and the spike and current waveform numbers are given explicitly as 2 and 1 respectively.

avgspfrq −r 30,557 −t 400 FF1327174 FF1327215
Two run files are analysed with a specified range and the differential spike threshold is set at 400.

avgspfrq −n 3 −c 1 −ct 3 −s 0 −t −50 −h 0 −d −r mult 091208-012
All current bursts in run file 091208-012 are analysed, with all options specified explicitly. Differentiation is turned off, and the spike threshold is set to a level of −50 mV.

SEE ALSO

analysis(1), spfrqpeel(1), spfrqramps(1)