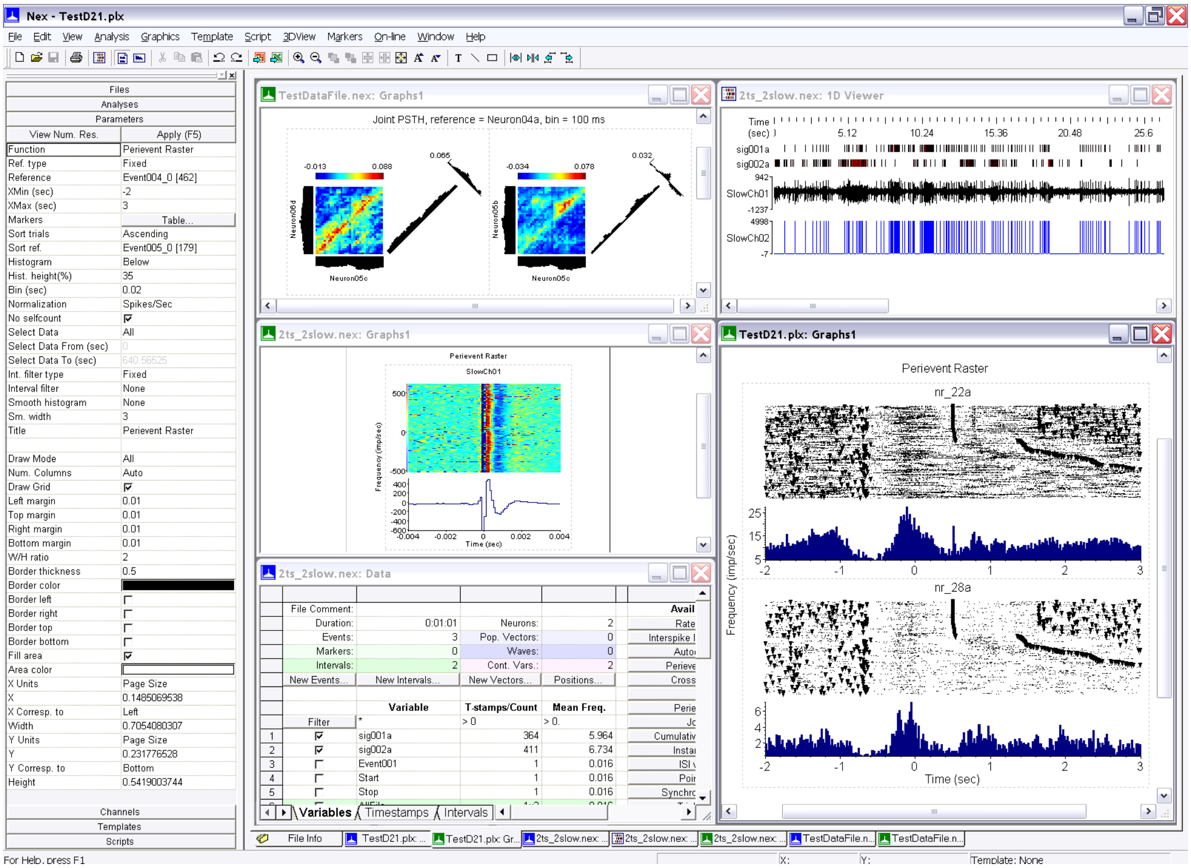
www.neuroexplorer.com

NeuroExplorer®

Neurophysiological data analysis package



Features

The most complete set of spike train analyses:

- Interspike interval histograms
- Rate histograms
- Perievent histograms
- Perievent rasters
- Autocorrelograms
- Crosscorrelograms with shift-predictors
- Joint peristimulus histograms
- Burst analysis
- Spectral densities and spectrograms
- Perievent histograms versus time
- Place cell analysis
- Reverse correlations
- Cumulative activity
- Instantaneous frequency
- Interspike intervals versus time
- Poincare maps of interspike intervals
- Epoch counts
- Coherence analysis

Analysis of continuously recorded signals:

- Correlations between spike trains and continuous signals
- Spike-triggered histograms and rasters
- Spectral analysis

Analysis of populations of neurons:

- Principal component analysis
- Population PST histograms
- 3D network activity animation

Data Import

NeuroExplorer can open data files created by many popular data acquisition systems:

- Alpha Omega
- Axon Instruments
- Bionic Technologies
- CED Spike-2
- Cortex
- DataWave
- Instrutech
- Multichannel Systems
- Neuralynx
- Plexon
- RC Electronics

NeuroExplorer can also import data from text files and transfer data from Excel and Matlab.

NeuroExplorer® is a product of Nex Technologies
Web: http://www.neuroexplorer.com
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To purchase NeuroExplorer®, please contact Plexon Inc:
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Web: http://www.plexoninc.com
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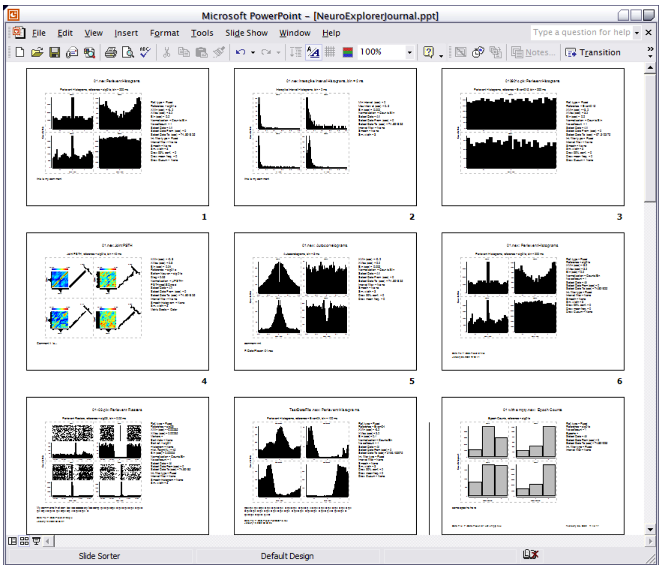
Graphics

NeuroExplorer creates fully editable publication-quality figures:

- 2D and 3D black-and-white and color graphs
- Unlimited number of graphs per figure
- Tables of graphs. Example: all pairwise correlations within a group of neurons.
- Completely customizable figure elements: colors, fonts, tick sizes, etc.
- Single-page and multi-page printing
- Export of graphics to other applications via the clipboard or Windows metafiles
- Create lab books of your results in Power Point:



Numerical Results

Two numerical results tables (*Results* and *Summary*) are produced for every analysis. The Results table contains:

- Bin location
- Bin counts/frequencies/probabilities
- Shift-predictor values and confidence limits for crosscorrelogram analyses
- Joint PST matrix for Joint PSTH analysis
- Other analysis-specific results

The Summary table contains:

- The number of spikes used in analysis
- Minimum, maximum, mean, standard deviation and standard error of mean of the histogram
- Expected values and the confidence limits for the PST and crosscorrelogram analyses
- Other analysis-specific statistics

NeuroExplorer can transfer the data from results tables to Excel or Matlab.

Trial-Based Data Analysis

NeuroExplorer provides extensive support for the analysis of the trial-based experiments:

- Trials of variable duration are supported
- Trials can be selected using the trial list
- Trials can be tagged according to various criteria. Example: tag the trials that contain the correct response.
- Analysis can be performed using all the data or only the data from the specified trial set.
- Several trial sets can be used in one analysis. Example: calculate the crosscorrelograms for the correct-response trials and the incorrect-response trials and display them side-by-side.

Internal Scripting

A powerful built-in scripting language allows the automation of many analysis tasks:

- Open and close data files
- Select data for analysis
- Specify analysis parameters
- Specify graphics options
- Apply analysis templates
- Save results as a text file
- Send data and results to Excel
- Send data and results to Matlab
- Execute Matlab scripts
- Modify existing spike trains and other data
- Create new events and spike trains
- Read and write text files

Working with Other Applications

NeuroExplorer is designed as an open analysis environment. You can use other programs to extend the capabilities of NeuroExplorer:

- Copy data to Excel, edit the data in Excel and paste it back to NeuroExplorer
- Generate data in Matlab and transfer it to NeuroExplorer
- Copy numerical results to Excel or Matlab for additional analysis
- Execute Matlab scripts from NeuroExplorer for additional processing
- Create a lab book of your results in Power Point

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