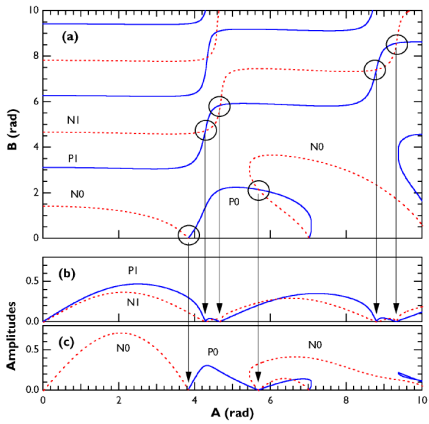
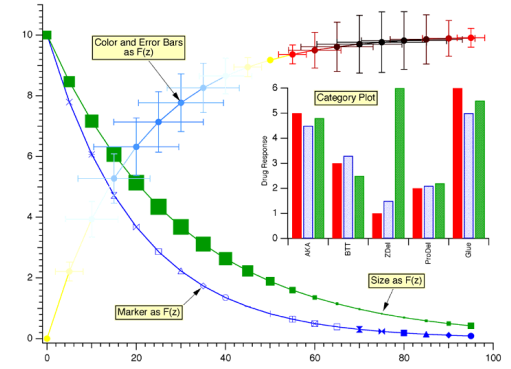


An IGOR Pro graph is a powerful tool for data exploration, analysis and presentation



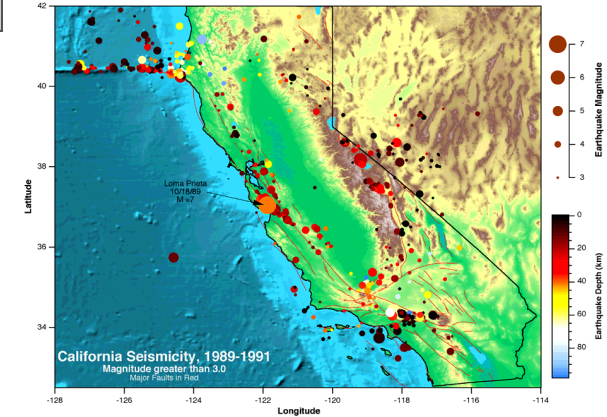
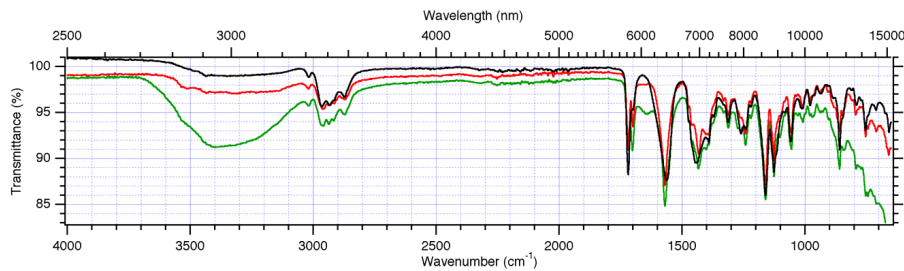
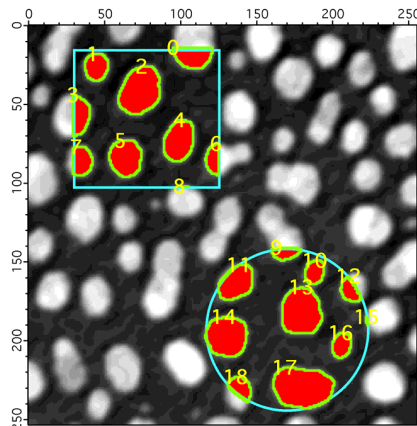
Enter data directly or import various data file formats



Define your own buttons, readouts and inputs to produce custom control panels

Unique user interface combines best of point-and-click and command-line operations.

Sophisticated programming environment — write your own code or build on the work of others.



IGOR Pro

- *Runs on Mac OS and Windows*
- *Fast Display of Large Data Sets*
- *Interactive Data Exploration*
- *Journal-Quality Graphics*
- *Powerful Curve Fitting*
- *Extensive Data Analysis*
- *Image Processing*
- *Data Acquisition Support*
- *Built-In Programming Environment Supports Analysis and Automation*
- *Highly Extensible*
- *Used by Scientists and Engineers Worldwide For Over a Decade*



Graphing

- Built-in graph types include highly customizable X-Y plots, contour, image, category, waterfall plots. Create interactive 3D graphics using the Surface Plotter and Graphical Slicer.
- Graph modes: lines, markers, lines and markers, dots, sticks and markers, sticks to zero, cityscape, bars, fill to zero, fill to next.
- Choose from 45 built-in marker symbols, text markers (either a character or from other data), arrow markers, error bars.
- Choose from 17 dashed line types; dashes are fully customizable.
- Specify marker color, marker size, or marker type as functions of other data. 72 fill patterns, positive and negative fills, fill between curves.
- Interactively zoom and pan. Use data cursors to inspect data values.
- Text annotations, legends, and color scale bars. Use subscripts, superscripts, mixed fonts and styles.
- High resolution drawing tools; create custom plots.
- Fully customizable and unlimited numbers of axes. Date and time axes in a wide variety of formats.

Image Plots

- Create image displays from matrix and XYZ data.
- Display images using 8 built-in color tables. Create indexed or custom color tables. Limit colors to a range of data.
- Add fully customizable color scale bars.

Contour Plots

- Automatic and user-defined, arbitrary contour levels.
- Color contours according to level, indexed from data, or all the same.
- Control contour label style, appearance, and position.

Surface Plotter

- Create wireframe, point cloud, fill, smoother fill, scatter plots.
- Rotatable using mouse.
- Show backdrop frames, grids, surface fill frame, image or contour projection. Add depth cues and droplines.
- Control axes, labels, and colors.

Presentation

Layouts

- Use page layouts to precisely arrange graphs, tables, pictures, annotations, and drawing elements for printing or export.
- Layouts are fully programmable; graphs, tables, and legends update automatically.

Notebooks

- IGOR Pro notebooks provide a built-in, programmable word-processor; use them to

record experiment results using text, tables and graphs.

- Internet support — save as HTML.

Export

- Print at high resolution.
- Export high-resolution graphics in EPS, enhanced metafile, PICT, BMP, and PNG formats.

Curve Fitting

- Fit data using built-in and arbitrarily complex user-defined functions with unlimited independent variables and fit parameters; fit to arbitrary subsets; hold coefficients.
- Apply weighting and linear constraints.
- Levenberg-Marquardt method for nonlinear fitting.
- Built-in fits: linear, polynomial (1D & 2D), exponential, double exponential, power law, sine, gaussian (1D & 2D), lorentzian, lognormal, Hill equation, sigmoid.
- Outputs include parameter values, standard deviation and confidence intervals; model curves; residuals; confidence bands; covariance matrix; chi-square.
- Global analysis package included.

Analysis

- Single and multidimensional mixed-radix FFTs, wavelet and Hough transforms, windowing, convolution, peak and level detection, smoothing (binomial, Savitzky-Golay, box, custom), integration, differentiation, ordinary differential equations, histograms, sorting, area, mean, and array arithmetic.
- Full suite of matrix operations using standard LAPACK routines.
- Find roots, maxima and minima of functions.
- Data statistics: average, standard deviation, RMS, average deviation, skewness, kurtosis, min/max values and locations, error functions, gamma functions, random numbers, Student's T distribution.

Image Analysis

- Full suite of tools for image filtering, manipulation, and quantification.
- Operations for image arithmetic, arbitrary non-contiguous region of interest (ROI) masking, background removal, HSL segmentation, windowing (hanning, hamming, bartlett, blackman, kaiser), blending, histograms, equalization, seed fill, rotation, statistics.
- Particle analysis: number, area, perimeter, circularity, rectangularity, location, raw moments.
- Image morphology: binary and grayscale erosion, dilation, close, open, watershed, tophat.

- Image thresholding: iterated, bimodal, adaptive, fuzzy entropy, and fuzzy means.
- Edge detection using canny, Frei, Kirsch, Marr, Prewitt, Roberts, Shen, and Sobel methods.
- Image transformations include FFT Hartley, Hough, convolution filters (gauss, gradients, median, sharpen, thin, min rank, max rank) color space conversions (RGB, HSL, XYZ), derivatives, correlations, extract and manipulate image data.
- Image import and export using QuickTime technology: JPEG, PNG, PICT, TIFF, BMP, QuickTime, Targa, Silicon Graphics, PhotoShop.
- Capture images from live video.

Data Formats/Import/Export

- Millions of data points; up to 4 dimensions.
- Two floating-point and six integer formats plus strings. Support for date and time data.
- Special support for waveform (equally-spaced) data.
- Handle files in general binary, delimited text, Excel, Fortran fixed-field, AIFF, FITS, HDF, JCAMP, MatLab, Nicolet, JPEG, PICT, TIFF, BMP, Targa, Photoshop, SGI, and Sun Raster formats.
- Create and control QuickTime movies.
- Data Browser — organize data into a meaningful hierarchy, graphical previews of data, view and edit wave and variable properties.
- Write your own procedures to import/export custom file formats.

Data Acquisition

- Acquire data from instruments through the serial port or through National Instruments GPIB boards. Use the optional NIDAQ Tools to acquire data directly from National Instruments boards.
- Use IGOR's programming tools to create custom instrument user interfaces and automate data collection, retrieval, and analysis.

Other Features

- Extensive online help system on using IGOR Pro; context-sensitive help, status line help, and tooltips. Complete reference for all built-in functions and operations.
- Help Browser — search multiple help files, procedure files, and notebooks.
- Complete IGOR Pro manual online in fully-searchable, cross-referenced PDF format.
- Create custom help to document your own IGOR Pro procedures.
- Use procedures to save notebooks as HTML, do FTP transfers or call a WWW browser.

Programmability

- A full-featured structured programming language to control virtually all aspects of IGOR Pro.
- Library of over 550 built-in functions and operations; supplemented with many external procedures and XOP utilities.
- Automate data analysis and acquisition tasks, and add analysis, graphing, and user-interface features.
- Symbolic debugger — troubleshoot your code efficiently; single-step through code, set breakpoints, view routines in the stack list, view lists of variables and their values, which you can edit.
- Syntax coloring shows structural code elements.
- Create custom interfaces using control panels with buttons, popup menus, lists, sliders, inputs, outputs. Add your own menus.
- Scriptable via AppleEvents and DDE.

Optional Packages

IGOR XOP Toolkit

- Enhance IGOR Pro's capabilities with external code modules by combining your own C code with the IGOR XOP Toolkit's source files.
- Create portable XOP modules for yourself and others to add customized functions, data loaders, data acquisition systems, etc., with their own menus, dialogs, and windows.

IGOR NIDAQ Tools

- IGOR Pro plus NIDAQ Tools makes a complete solution from acquisition of raw data to publication of graphs.
- Acquire data directly into IGOR Pro using National Instruments "multifunction" data acquisition boards.
- With a DAQCard series board and a notebook computer, you have an instant portable data acquisition system.

IGOR Filter Design Lab

- Design, apply, and evaluate Finite Impulse Response (FIR) filters in IGOR Pro.
- Filters include: Kaiser's Maximum Flatness design, McClellan-Parks-Rabiner equiripple method, window method design (Hanning, Kaiser, Parzen, Welch, etc.).
- View magnitude, phase, group delay, impulse, and step responses. Apply designed filters to your data and view the results.