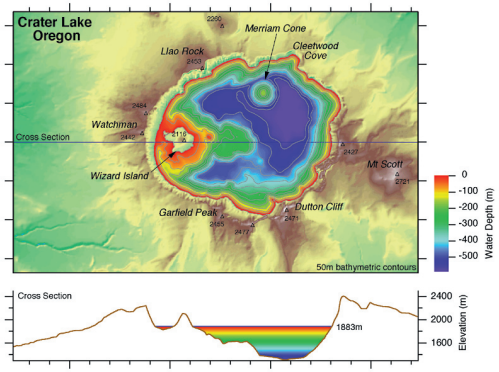
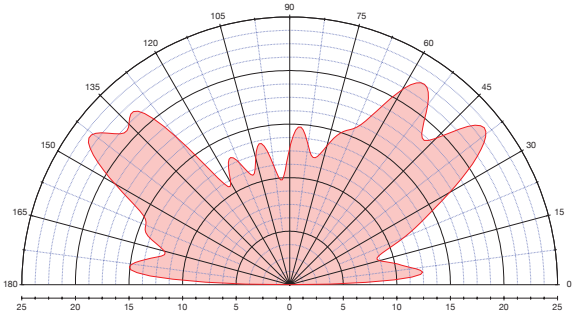
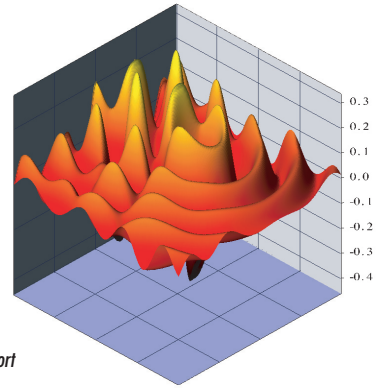
IGOR Pro

Technical Computing for Scientists and Engineers

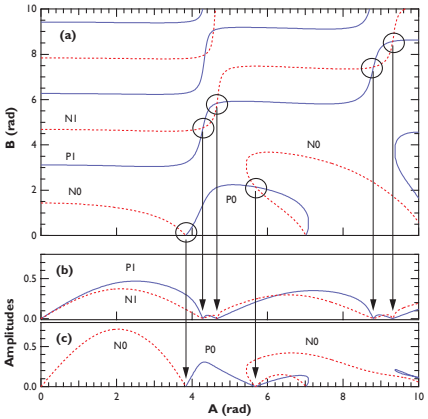
WaveMetrics, Inc.

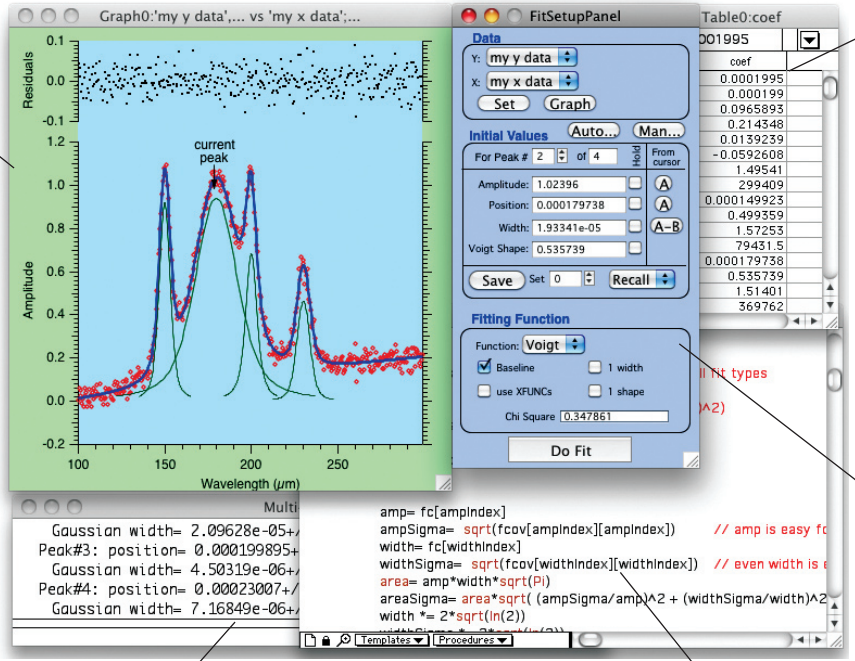




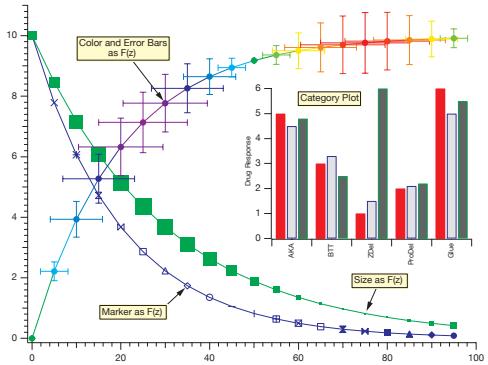


An IGOR Pro graph is a powerful tool for data exploration, analysis and presentation





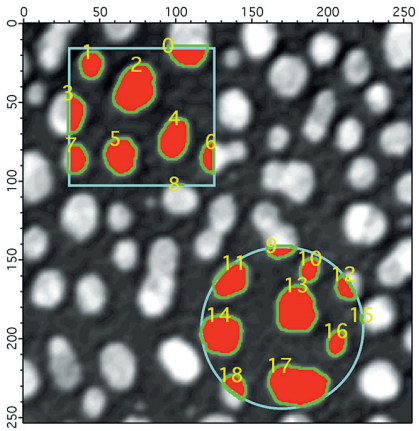
Enter data directly or import various data file formats

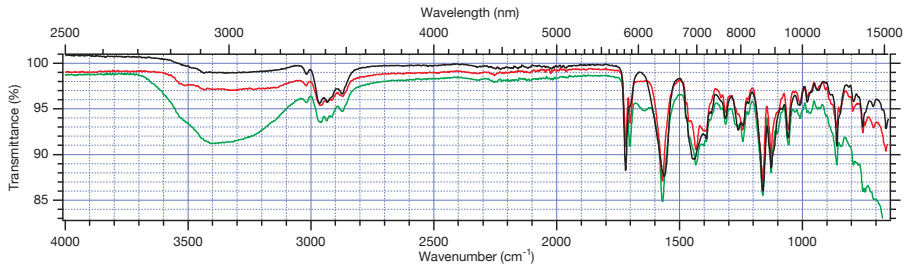


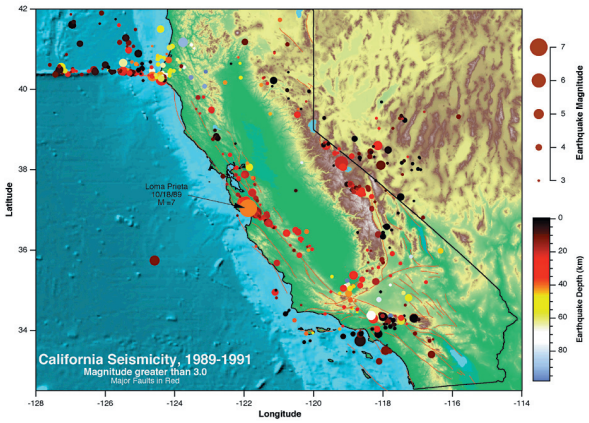
Define your own buttons, readouts and inputs to produce custom control panels

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 X and Windows*
- *Fast Display of Large Data Sets*
- *Interactive Data Exploration*
- *Journal–Quality Graphics*
- *Powerful Curve Fitting*
- *Extensive Data Analysis & Statistics*
- *Image Processing*
- *Data Acquisition Support*
- *Built-In Programming Environment Supports Analysis and Automation*
- *Customizable User Interface*
- *Used by Scientists and Engineers Worldwide Since 1989*

NET Engineering
DISTRIBUZIONE

Per informazioni commerciali:

NET ENGINEERING
C.so Borsalino 19/A, Alessandria - T. 0131. 250313
www.net-eng.it

Graphing

- Built-in graph types include highly customizable X-Y plots, contour, image, category, waterfall plots. Create interactive 3D visualization graphics.
- Choose from 62 built-in marker symbols, text markers (either a character or from other data), arrow markers, error bars, 17 dashed line types; customizable dashes.
- 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 cursors to inspect data values.
- Text annotations, legends, and color scale bars. Use subscripts, superscripts, mixed fonts and styles.
- High resolution drawing tools.
- Fully customizable and unlimited numbers of axes. Date and time axes in a wide variety of formats.

Image Plots

- Image plots from matrix and XYZ data.
- Display images using 58 built-in color tables. Create indexed or custom color tables. Limit colors to a range of data.
- 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.

3D Visualization

- Create surface, 3D path, and ribbon plots, 3D scatter and object plots, iso-surface voxelgrams and volume slices.
- Use the power of OpenGL to add transparencies and textures.

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, using multiple threads.
- Apply weighting and linear constraints.
- Levenberg-Marquardt method for nonlinear fitting.
- Orthogonal distance regression, errors in X, global analysis.
- 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.

Presentation

Layouts

- Use page layouts to precisely arrange graphs, tables, pictures, annotations, and drawing elements for printing or export.

Notebooks

- IGOR Pro notebooks provide a built-in, programmable word-processor; use them to record experiment results using text, tables and graphs.

Export

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

Analysis & Statistics

- Single and multidimensional mixed-radix FFTs, continuous and discrete wavelet transforms, Hilbert, Hough, Wigner and Fast Gauss Transforms.
- Smoothing (binomial, Savitzky-Golay, box, median, Loess), integration, differentiation, IIR and FIR filtering, convolution, ordinary differential equations, histograms, sorting, area, mean, array arithmetic, windowing, peak and level detection.
- Full suite of matrix operations using standard LAPACK routines.
- Find function roots or extrema using direct methods or simulated annealing.
- Special functions and orthogonal polynomials.
- Probability distribution functions, cumulative and inverse cumulative distribution functions.
- Statistical analysis including moments, quantiles, correlations and serial randomness.
- Statistical tests including ANOVA, Bartlet, Cochran, Chi-squared, F, Jarque-Bera, Kolmogorov-Smirnov, Levin, Scheffe, t, and Tukey.
- Statistical multi-comparison tests.
- Non-parametric hypothesis tests including Friedman, Mann-Kendal, Kruskal-Wallis, Spearman and Wilcoxon's.
- Statistical analysis for angular data.
- Random number generators for various distributions.
- Cluster analysis with K-means and farthest-point algorithms.
- Computational geometry including 2D and 3D triangulation and interpolation.

Image Analysis

- Full suite of tools for image filtering, manipulation, and quantification.
- Image thresholding: iterated, bimodal, adaptive, fuzzy entropy, and fuzzy means.
- Operations for image arithmetic, arbitrary non-contiguous region of interest (ROI) masking, background removal, color segmentation, windowing (Hanning, Hamming, Bartlett, Blackman, Kaiser), blending, histograms, equalization, stack focus, registration, rotation, statistics.
- Particle analysis: number, area, perimeter, circularity, rectangularity, location, raw moments.
- Image morphology: binary and grayscale erosion, dilation, close, open, watershed, tophat, seed fill.
- 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; 1-4 dimensions.
- Two floating-point and six integer formats, strings, date and time data.
- Special support for waveform (equally-spaced) data.
- Handle files in general binary, delimited text, Excel, Fortran fixed-field, FITS, HDF5, JCAMP, MatLab, Nicolet, TDM, JPEG, PICT, TIFF, BMP, Targa, Photoshop, SGI, Sun Raster, DEM, SDTS (and other GIS) data formats, multi-channel MP3, AIFF, and WAVE sound files.
- Access SQL databases through ODBC.
- 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, or move, copy, and delete files and folders.
- Extract data using regular expressions ("grep").

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.
- Acquire data using VISA through GPIB, serial port, TCP/IP, and other VISA-capable hardware.
- Create custom instrument user interfaces and automate data collection, retrieval, and analysis.

Programmability

- A full-featured structured programming language to control virtually all aspects of IGOR Pro with over 965 built-in functions and operations
- Automate data analysis and acquisition tasks.
- Multi-processor and threading support for built-in and user-defined routines.
- Symbolic debugger.
- Create custom interfaces using control panels with buttons, popup menus, lists, sliders, inputs, outputs. Add your own menus, completely or selectively replace Igor's built-in menus.
- Scriptable via AppleEvents, ActiveX Automation, and DDE.

Documentation

- Complete IGOR Pro manual online in fully-searchable, cross-referenced PDF format.

Optional Packages

IGOR XOP Toolkit

- Enhance IGOR Pro's capabilities with external code modules by combining your own C or 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 MX

- Acquire data directly into IGOR Pro using National Instruments "multifunction" data acquisition boards.

IGOR Filter Design Lab

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