Altair HyperGraph™
2D & 3D Plotting and Data Analysis

Altair HyperGraph is a powerful data analysis and plotting tool with interfaces to many popular file formats. Its intuitive interface and sophisticated math engine make it easy to process even the most complex mathematical expressions. HyperGraph combines these features with high-quality presentation output and customization capabilities to create a complete data analysis system for any organization.

Product Highlights

- Plots huge amounts of data in a customized layout from single or multiple result files
- Fast repetitive plot generation through report templates
- Efficient data comparison between model iterations or simulation and test data
- Fully automated PowerPoint report generation
- Over 200 built-in mathematical functions and operators
- Interfaces with more than 130 data formats
- Pre-defined or customized math operations on curves
- Spreadsheets linked to other clients in Altair HyperWorks Desktop

Learn more:
altair.com/hypergraph

Benefits

HyperGraph provides design, test, and engineering professionals with an intuitive plotting and data analysis package:

- 2D & 3D plotting environment: Explore your data in xy-, complex- or polar plots and bar charts; use Altair HyperGraph3D for three-dimensional line and surface plotting.
- TableView spreadsheets: Math expressions inside of a cell synchronize automatically with HyperGraph. TableView is ideal for creating summary tables in reports.
- Plotting huge amounts of data: Retrieve fully labeled plots from data files based on metadata and channel information with HyperGraph's advanced plotting options.
- Plot generator handles multiple files and subcases in an efficient way
- Summary Tables: Conditionally formatted summary tables provide an effective way to identify critical key performance indicators for sessions with multiple plots and pages.
- Accelerate repetitive plot generation:

Store reports over several windows and pages and reuse them for model variations and iterations.

- Browser driven navigation: Adjust one or multiple plots at a time or do result math via context sensitive menu options.
- Marker tracking: Track markers from a video and derive displacement over time curves.
- Math function library: Add user-defined math functions to Altair's large math library.
- Comparison of test and simulation results: Compare sets of test and simulation data in a highly automated way.
- Unit Scaling: HyperGraph supports automated unit scaling based on result file meta data.
- Customize the interface: Modify interface and tools to fit any engineering environment.
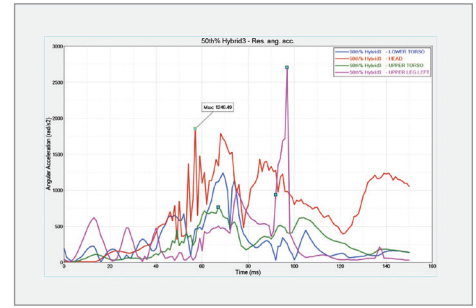
Improve Productivity

- Reports: Automate the generation and presentation of standard plots and tables, compare results and perform correlation studies using the "Report: Overlay" option.
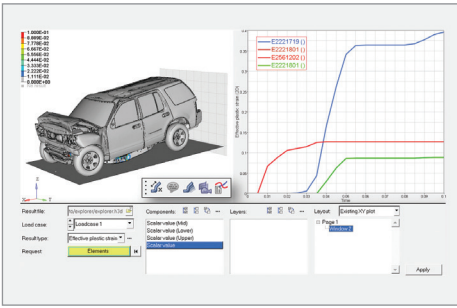
Altair HyperGraph is part of the Altair HyperWorks framework
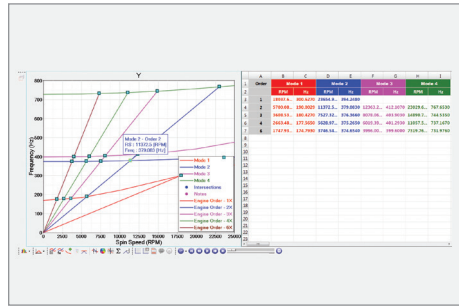
Campbell Diagram in plotting client and table view

Mouse over highlighting of notes for better visibility

- Plot macros: Use plot macros to capture and replay often-used mathematical curves.
- Tcl/Tk programming layer: Automate procedures through a programmable command layer.
- Custom import and export templates: Read and write XY plot data.
- User written math functions: Build custom math functions within the interface, register existing C and Fortran routines or use HyperGraph's interface with Altair Compose® to access its math functions.
- Custom pull-down and context sensitive menus: Provide easy access to reports, plot macros, Tcl/Tk utilities and 3rd party executables.
- Vertical specific user profiles for NVH, crash, forming or multi-body dynamics.
- Curve Math Stack: Easily enable or disable the display of multiple math operations on the same curve.

Plot Builder And Plot Details

Altair HyperGraph's customizable automatic plot builder generates a series of fully annotated XY plots, polar plots, bar charts and complex plots directly from engineering and test data files according to customers requirements. A wide array of formatting options allow users to specify how plotted data appears and is arranged on pages within the session. An intuitive and highly efficient interface provides browser-driven direct access to edit or modify all plot areas including axes, header, footer, legend, and curve properties simultaneously for multiple plots.

Analyzing Your Data

Create new math curves from existing data curves by writing mathematical expressions or by selecting from a library of over 200 built-in mathematical functions and operators. HyperGraph also contains a sophisticated math engine for performing complex mathematical operations or building custom math expressions including:

- Crash injury
- Signal processing
- Curve fitting
- Filtering
- Eigensystem analysis
- Integration and differentiation
- Statistical analysis
- User-defined math functions
- User-defined expressions
- Extreme Curve Analysis
- Curve Correlation

Report Generation

Generating a standard report is made easy with HyperGraph by using the Publish PowerPoint capability along with the Report Templates functionality. The contents are synchronized between both applications, so that even individual changes in Altair HyperView™ can be updated automatically in the presentation. Users have detailed control of the format and the content to export. The utility supports all common file formats for graphics and video.

- Report export: PowerPoint
- Synchronization: PowerPoint plug-in or from HyperView
- Animation export: AVI, H3D, GIF
- Image export: BMP, JPEG, PNG, TIFF
- Summary data export: Multi-column, customizable formatting

Supported Data Formats

HyperGraph supports more than 130 data formats. The most common include:

- Altair® Formats (.H3D, .abf)
- Abaqus (.odb and .dat)
- Adams
- ANSYS
- ASAM-ODS(.atfx)
- DADS
- DATX
- DIAdem
- Excel (.csv)
- HDF 5.0
- ISO/ ISO-MME 13499
- ISO 6487
- LS-DYNA
- Madymo
- Altair MotionSolve™
- Multi-column ASCII
- Nastran (.op2, .pch, .f06)
- nCode
- Altair OptiStruct™
- PAM-CRASH (.dsy and .thp)
- Altair Radioss™
- Ride data files
- RPC-3
- Universal Block 58 and XRF
- xy-data files
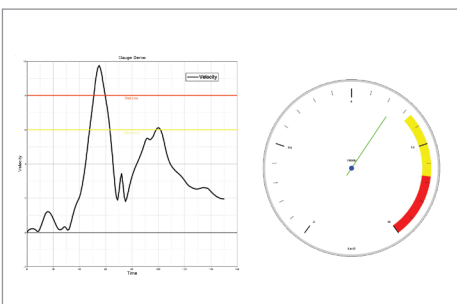
Animation of XY data as gauge
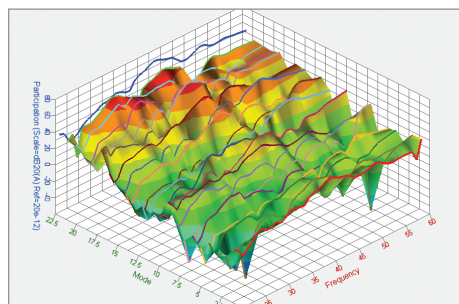
Colormap plot for Modal Participation
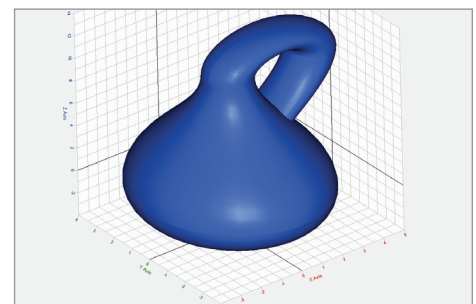
Bottle plot with Altair HyperGraph 3D