COMPOSE™
solidThinking

Matrix-based Environment for Math Operations

solidThinking Compose enables engineers, scientists & product creators to efficiently perform numerical computations, develop algorithms, analyze & visualize various types of data. Compose is a high level, matrix-based numerical computing language as well as an interactive & unified programming environment for all types of math from solving matrix analysis, differential equations to performing signal analysis and control design.

Product Highlights

- High-level matrix-based interpreted language for numerical computing
- Integrated development environment for authoring and debugging all types of math including multi-language support
- Built-in connectivity to pre/post-process Engineering and Computer Aided Engineering (CAE) data
- Extensive math libraries:
  - Statistical data analysis
  - Matrix analysis & number theory
  - Signal processing
  - Interactive 2D & 3D plotting
  - Differential equations
  - Optimization

Learn more:
solidThinking.com/Compose

Benefits

Rapid algorithm development

A comprehensive set of tools enable rapid development of custom numerical code. The matrix-based language, authoring and debugging tools along with access to a broad set of math libraries and utilities not only cover a wide range of user's needs but also enables users to explore multiple approaches and find solutions faster than with spreadsheets or traditional programming languages such as C/C++. Easy diagnosis of code through interactive debugging reduces development effort.

Robust design exploration & verification

The Open Matrix Language (OML) is not only easy-to-use, but also compatible with Industry standards such as Octave. The interactive desktop environment in Compose allows its users to quickly debug code, allowing for streamlined & faster troubleshooting of errors without the need to embed diagnostic statements or code.

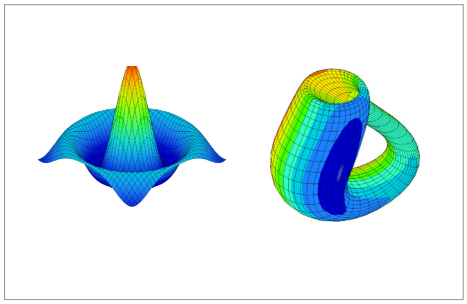
Easy engineering data access & processing

Built-in suite of engineering calculations and Computer Aided Engineering (CAE) data and result readers provide quick access to a large set of data formats for pre and post-processing needs. Data can also be exported to various CAE file formats.

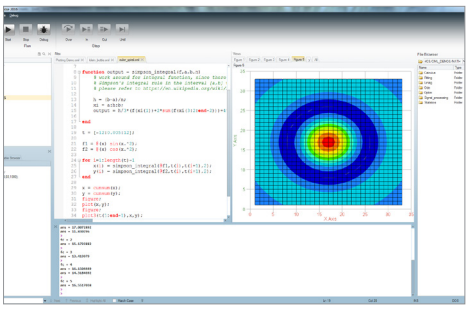
Capabilities

Powerful & flexible programming

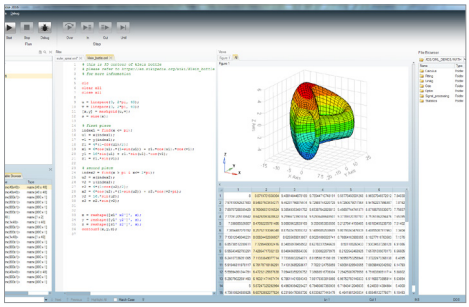
- Matrix based data structure
- Fully interpreted
- Compatible with Industry standards
- Batch-mode execution
- Literals, Data Types, Strings, Variables & Assignments, Indexing
- Operators, Expressions & Statements, Flow of control & looping
- Workspace & Scoping Rules, Functions, Error & warning I/C



Rich 2D & 3D data visualization



Modern Integrated Development Environment with a powerful debugger



Variable browser with options to easily monitor and edit variable values during debugging

Integrated Development Environment

- A fully featured command window with command completion, code editing and display print command outputs during script execution from the editor allow for visual and interactive code inspections during runtime
- Modern script editor with syntax highlighting, smart indentation, collapsible sections including code folding, bookmarking, searching and toggle to display on/off line numbers
- Script editor allows users to split the screen into multiple views for more interactive authoring and execution
- Multi-language environment with support for OML & TCL
- Powerful debugger with options to easily monitor variable values via watch window, track paths traced while executing scripts via call stack window and display all breakpoints in the debugging session via the breakpoints window
- Intuitive project browser with a hierarchical structure of all the scripts, plots and matrices for easy navigation
- File browser allows direct access to existing program files on disk
- Variable browser displays all the user-generated and global workspace variables including their name, value, type and scope. Options to easily monitor variable values during debugging
- Command history window not only displays all commands entered while programming but also enables quick execution with support for double-clicking on each command or drag/drop into the command window

Extensive Math Libraries

- Calculus
- Core Minimal Interpreter
- Data Structure
- Differential Equations
- Elementary Math
- File structure
- Bridges for Engineering & Computer Aided Engineering (CAE) data
- Linear Algebra
- Logical Commands
- Optimization
- Plotting
- Polynomial Math
- Signal Processing
- Statistical Analysis
- String Operations
- System Commands
- Time Commands
- Trigonometry Commands
- Vectors & Matrices

Data visualization, plotting & reporting

- Support for various 2D & 3D graphs
- Graph properties and attributes can be modified easily and interactively with context menus to set plot titles, labels, axis labels, legends & tick mark labels
- Zoom and pan support
- Report generation

Connectivity

Tools to read and extract data from Computer Aided Engineering (CAE) models and results.

Function & Path Management

- Open Matrix Language (OML) in Compose offers the ability to use variable left hand side (LHS) and right hand side (RHS) for an equation giving users significant flexibility
- Define functions on the fly without the need to create a function file. Scoping rules give users access to all variables local to the function where they're defined and assigned

Open Matrix Language (OML) Interpreter

- Interpreter for enhanced interaction to support interruption of long scripts
- Provides an extension to the variable browser to support additional objects; includes syntax highlighting and auto completion and provides all the debugging features