

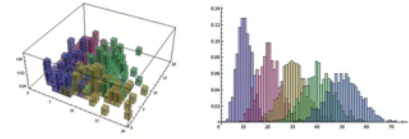
Data Manipulation

STATISTICAL MODEL ANALYSIS

Linear and nonlinear models, probit, logit, and much more are all immediately available, integrated into *Mathematica*, with scores of diagnostics and options.

AUTOMATIC HISTOGRAM GENERATION

Take data and automatically create optimized histograms in 2D and 3D.



INTEGRATED PROGRAMMATIC EMAIL

There is now a *Mathematica* function that sends anything as email, including graphics and other attachments.



SECURE WEBSITE & NETWORK CONNECTIVITY

Automatically manage passwords, encryption, etc. in interacting with secure websites, databases, and more.

OTHER RECENTLY ADDED FEATURES

- Exploratory Data Analysis
- Symbolic Sound Support
- Symbolic Report Generation
- 3D Printing & Scanning Support
- Symbolic Statistical Computing

Interface & User Experience

SPEECH OUTPUT

Have *Mathematica* speak mathematical expressions, programs, and diagrammatic graphics.

ENHANCED TYPESETTING AUTOMATION

Achieve a new level of clarity and elegance in the automatic formatting of mathematical expressions of any length.

$$\frac{\sqrt{-1} \operatorname{Li}_2\left(\frac{x+1}{1-\sqrt{-1}}\right) + \sqrt{-1} \operatorname{Li}_2\left(\frac{-x+1}{1+\sqrt{-1}}\right) - \frac{1}{4}(-1)^{3/4} \operatorname{Li}_2\left(\frac{x+1}{1-(-1)^{3/4}}\right) + \frac{1}{4}(-1)^{1/4} \operatorname{Li}_2\left(\frac{x+1}{1+(-1)^{1/4}}\right) - \frac{x^{17}}{289} + \frac{1}{17} x^{17} \log(x+1) + \frac{x^{16}}{272} - \frac{x^{15}}{255} + \frac{x^{14}}{238} - \frac{4x^{13}}{2873} - \frac{1}{13} x^{13} \log(x+1) - \frac{x^{12}}{663} + \frac{4x^{11}}{2431} - \frac{2x^{10}}{1105} + \frac{185x^9}{17901} + \frac{1}{9} x^9 \log(x+1) + \frac{185x^8}{15912} - \frac{185x^7}{13923} + \frac{185x^6}{11934}$$

OPTIMIZED NOTEBOOK ERGONOMICS

New context-sensitive interface elements streamline notebooks for both novices and experts.

QUICK-START ASSISTANT PALETTES

Access features of *Mathematica* immediately through extensive Assistant palettes.



NEW INTERFACE ELEMENTS

Several new elements further extend *Mathematica*'s rich interface-building capabilities.



OTHER RECENTLY ADDED FEATURES

- Symbolic Interface Construction
- Integrated Graphics Editing & Drawing
- Built-In Gamepad & HID Support
- Streamlined Presentation Framework
- New Documentation Framework
- Dynamic Interactivity

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For more information about *Mathematica 7*, visit wolfram.com/newin7

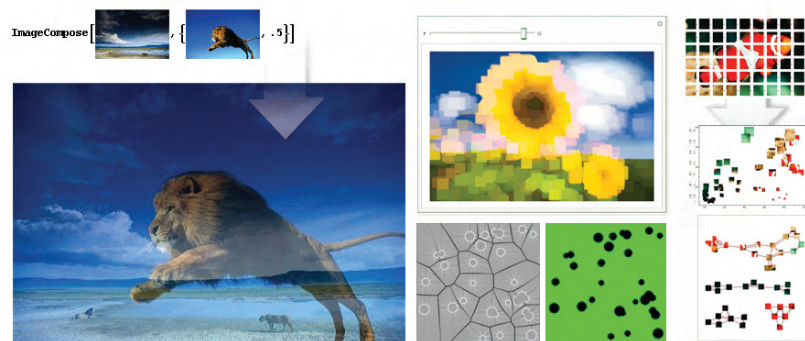
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WHAT'S NEW IN **Wolfram Mathematica[®] 7**
508 NEW FEATURES • 12 NEW APPLICATION AREAS • 1 HIGHLY INTEGRATED SYSTEM

From computation to visualization, development to deployment, *Mathematica 7* builds on 20 years of innovation to deliver one vision: the ultimate technical application and environment. *Mathematica 7* includes over 500 new functions and 12 additional application areas, all seamlessly integrated in one system that gives you unprecedented workflow, coherence, and reliability.

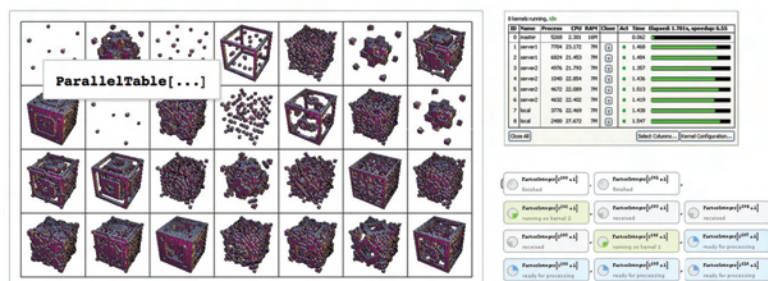
Built-In Image Processing & Analysis

Introducing a new generation of industrial-strength image processing, built into *Mathematica's* integrated algorithm, programming, and interface platform.



Built-In Parallel Computing

Take advantage of the latest multicore processors with *Mathematica's* new automatic parallel computing technology—seamlessly parallelizing your computations.



Computable Data

INTEGRATED GENOMIC & PROTEIN DATA

Look up sequences, genes, and proteins for immediate use in analysis, modeling, and visualization.

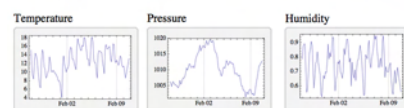


DYNAMIC ASTRONOMICAL COMPUTATION

Compute current sky and absolute positions of planets, minor planets, stars, and more, all inside *Mathematica*.

CURRENT & HISTORICAL WEATHER DATA

Use current and historical weather data from around the world for computation, visualization, and analysis.



EXTENDED CHEMICAL DATA

More than double the number of compounds and properties are now included.

INTEGRATED GEODESY & GIS

Use the latest high-precision geodetic techniques, directly connected to geographic data.

OTHER RECENTLY ADDED FEATURES

- Financial Data
- Astronomical Data
- Country Data
- Particle Data
- Graph Data
- Mathematical Data

Mathematics & Algorithms

INDUSTRIAL-STRENGTH BOOLEAN COMPUTATION

Apply high-performance Boolean analysis, optimization, and verification to systems with thousands of variables—all integrated into the *Mathematica* workflow.

DISCRETE CALCULUS

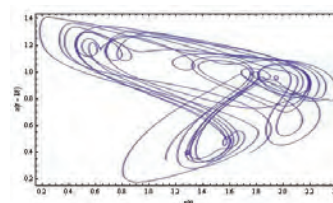
Solve a new generation of discrete problems with the first-ever comprehensive system for discrete symbolic calculus.

DELAY DIFFERENTIAL EQUATIONS

DDEs are now an integral part of *Mathematica's* automatic numerical differential equation solving capabilities.

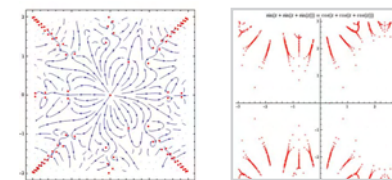
DIFFERENTIAL & DIFFERENCE ROOTS

A breakthrough allows direct handling of implicit solutions of differential and difference equations—dramatically generalizing the concept of special functions.



TRANSCENDENTAL ROOTS

Introducing the first-ever systematic algorithmic treatment of roots of transcendental equations.

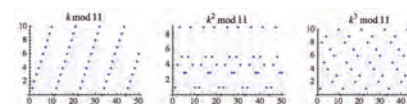


FINITE GROUP THEORY

Data and algorithms on finite groups are now integrated into the *Mathematica* system.

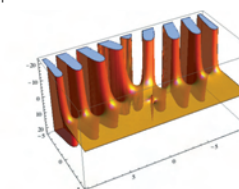
INTEGER SEQUENCE ANALYSIS

Mathematica 7 introduces a suite of new approaches to the analysis and recognition of integer sequences.



NEW NUMBER THEORY CAPABILITIES

New aspects of analytic, multiplicative, and additive number theory are now available in computational form.



NEW CATEGORIES OF SPECIAL FUNCTIONS

q functions, L -functions, and a range of other functions join the world's largest collection of special functions.

ENHANCED FOURIER ANALYSIS

Explicit Fourier series are now fully integrated into *Mathematica's* symbolic capabilities.

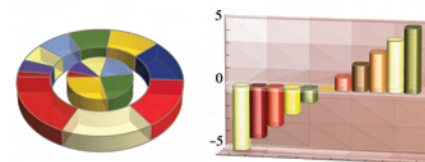
OTHER RECENTLY ADDED FEATURES

- Integrated Geometric Computing
- Combinatorial Optimization
- Constrained Nonlinear Optimization
- Equational Theorem Proving
- High-Level String Computation
- New Generation Numerical Integration

Visualization & Graphics

AUTOMATED CHARTING GRAPHICS

Algorithmic information visualization takes a major step forward by using *Mathematica's* symbolic architecture, flexible graphics, and automatic computational aesthetics.

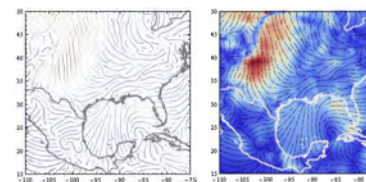


NEW GRAPHICS PRIMITIVES

Tubes, rounded rectangles, and 3D arrows join the powerful primitives integrated into *Mathematica's* graphics system.

VECTOR & FIELD VISUALIZATION

Create automatically optimized visualizations of vector fields and streamlines—for fluids, electrodynamics, and other fields.



COMPREHENSIVE SPLINE SUPPORT

The world's most general splines, in any number of dimensions, fully integrated into computation and graphics.

OTHER RECENTLY ADDED FEATURES

- High-Impact Adaptive Visualization
- Automated Computational Aesthetics
- Fully Automated Graph Layout
- Real-Time 3D Graphics
- Automated Table Layout
- Dynamic Interactivity