

Scientific Word / Workplace 2.0.1.*

What's new?

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Scientific Word version 1.x from TCI Software Research has gotten improvements and an offspring. The improvements are not only better support for different \LaTeX styles and dialects but also more user conveniences and better stability. The offspring is **Scientific Workplace**, a similar Windows software package under Windows 3.1. But besides all the Scientific Word functions it also has a built-in Maple Version V interface and many Maple symbolic calculation functions. Not to forget that version 2.0.1. works fine under OS/2 Warp with all its speed and data exchange advantages.

1 Additions

Since the introduction of Scientific Word in 1992 $\text{\LaTeX}2_{\epsilon}$ has been released. This new version of Scientific Word supports the new version of \LaTeX . A major benefit is the New Font Selection Scheme. This allows full use of TrueType fonts.

Another use is the graphically oriented style editor. The layout of a document can be graphically determined. This includes placing of headers, footnotes, margin notes, font, fontsize and many other items.

Many documents are made in \LaTeX . Scientific Word can create documents in this format. This is further supported by the rather extended \LaTeX symbols set. As before these symbols are easily selected from symbol panels.

However these symbol panels can be edited by the user. Not only can the most used symbols be placed in a cache bar as before, but other often used symbols can be placed on the symbol panel where it is the easiest for the typist.

Another handy feature for the typist is automatic substitution that allows the keying of part of a mathematical expression, the program then adds automatically the rest. You can determine your own substitutions. The same tactics apply to the accented characters. They can be inputted from the keyboard, a symbol panel or from the cache bar.

Not only supports Scientific Word \LaTeX but also \ReVTeX as defined by American Physical Society, Optical Society of America and the American Institute of Physics. As these institutes do not allow others to distribute their

macros the user has to download them from one of their bulletin boards. But they do work under Scientific Word.

\BibTeX is included to allow easy generation of bibliographies. Indexes can be made much faster. This is important for large documents. These are also better supported. You can make a file calling parts of a large document. Each part can be handled separately or for the final print as part of the complete book. Useful is the new compile facility. This allows to precompile a document before printing or previewing. As before Scientific Word senses when a document has changed and will then insist on a new compile.

Graphics can be imported and placed according to different \TeX possibilities in the document. The following graphics formats are supported:

WINDOWS DIB (bmp), COREL DRAW (cdr), METAFILE (cgm), CLEAR TEXT CGM (ctm), MICROGRAFX DRAWING (drw), AUTOCAD INTERCHANGE (dxf) ADOBE ILLUSTRATOR (ai), ENCAPSULATED POSTSCRIPT (eps), HP GRAPHICS (hgl) (plt), LOTUS PICTURE (pic), MACINTOSH PICT (pct) WINDOWS METAFILE (wmf), GRAPHICS INTERCHANGE (gif), JPEG (jpg), PAINTBRUSH (pcx), TAG IMAGE (tif), WORDPERFECT (wpg) DIGITAL RESEARCH (img), PAINT (msp) IBM IOCA, GRAPHICS (ica), SUN RASTER (ras), ASCII (txt), MAC PAINT (mac), PHOTO-SHOP (psd) CALS (cal), LASERVIEW (lv), XBITMAP (xbm), PIXMAP (xpm), KODAK PHOTO CD (pcd), HALO (cut), ICON (ico), AMIGA (iff), CLIPBOARD (clp)

Also you can import files in RTF format (from e.g. Word).

Additions can also be found due to Windows improvements released by Microsoft. Scientific Word is delivered with Win32 speeding up all your applications which can use 32 bits. Scientific Word itself uses it for the previewer. You have the choice of a 16bit or a 32bit one. The latter one works really fast under Win-OS/2. Another released Windows features supported are drag and drop of text in one document.

An addition, which you may wonder why it was not there in the first place, is the import of the contents of a file. You can import another \LaTeX file and give it the style of the document you are working with.

*A Hypertext Scientific Word / Workplace demo diskette is included with this MAPS.

2 Improvements

Tables can be made fully in the text mode, no \TeX is visible anymore and the table is presented fully WYSIWYG while you are composing it. It resembles somewhat the ease with which you always made very large matrices and filled them with complex expressions.

Predefined print styles have been improved and many have been added. Some of them are modifiable thru the graphical style editor. All available styles are listed in the hypertext demo of Scientific Word.

Lists can still be made included nested ones. You can assign your own symbol as list marker.

Customization of the screen, how the different document parts are displayed, has been made more flexible. You can define a default appearance.

Cross references are fully automatically resolved. You do not have to determine anymore the number of passes the compiler should make.

3 Still there

Good things do not die. Hence you still input text and mathematical formulas in WYSIWYG mode. However they are stored internally in a \LaTeX format. This can be made visible in the \TeX field box via the clipboard. The new Scientific Word specific file manager allows a view of the whole document in ASCII. In inputting formulas you indicate the mathematical attribute (like subscript) and the program determines font size and placement. The placement depends on how you put the formula: in-line or centered by itself on a line (display type). Also the font size changes between these two. In version 2.0.1. you can work now with multiline display types and cross reference to each line in the multiline display. Still there is the facility to record the keystrokes for a complex mathematical formula and store this as a 'fragment'. Fragments can be replayed (CTRL+given name) and the formula adjusts itself to in-line or display type.

Still there is the interesting display of text and mathematics. Mathematics is displayed in another color so you can see if sine is meant as a word or as an expression. What has been added in composing mathematical formulas are spaces. Although not in the \TeX specification this appeared to be necessary. For example after the italics in a mathematical formula you need some extra space in order for the upright character not to cross thru to the top of the previous italic character. There is a choice of different EM spaces. You select them from a symbol display. Greek and Mathematics symbols can also be selected from two other keyboards.

Of course the DVI printer drivers are still there. You can print, rather fast, to laser — postscript — inkjet and matrix printers. The document can still be spell checked in many different languages like Danish, French, German, Swiss German, etc. There is still the separate treatment of front matter (author, abstract, . . .) and the listing of document information like dates, typist. . .

4 Scientific Workplace

This offspring contains the EasyMath technology of TCI Software Research and a part of Maple V.

The EasyMath technology allows you to write the same formula in different ways. Obviously there always remains ways which will not be understood by the program but the known ways are supported. This approach is needed when one wants a formula to shine not only on paper but also wants to shine as the input to the symbolic calculation mechanism of Maple V. Maple has to understand the meaning of the formula. It then calculates the result and puts this preceded by an equal sign into the document. The document is immediately reformatted by Scientific Workplace to give the proper space to the result. The calculations are done on the highlighted part of a formula. This makes it possible to calculate on part of a formula.

The following classes of Maple functions are supported:

- EVALUATE (NUMERICALLY)
- SIMPLIFY
- COMBINE: exponentials, logs, powers, trigfunctions
- FACTOR
- EXPAND
- PLOT 2D: rectangular, polar, implicit, parametric, conformal, gradient, vector field, ODE, phase place
- PLOT 3D: rectangular, cylindrical, spherical, implicit, tube, gradient, vector field
- SOLVE (ODE): exact (Laplace), numeric (series), integer, recursion
- CALCULUS: integrate by parts, change variable, partial fractions, approximate integral, plot approx., integral, find extrema, iterate implicate differentiation
- SIMPLEX: minimizedual, feasible, maximize, standardize
- STATISTICS: fit curve to data, random numbers, mean, median, mode, correlation, covariance, mean, deviation, moment, quantile standard deviation, variance
- CHECK EQUALITY
- DEFINE: new, undefine, show, clear, save, restore, define maple name
- SERIES
- VECTOR CALCULUS: Jacobian, Hessian, Scalar potential, Vector Potential
- MATRICES: adjugate, concatenate, characteristic, column basis, condition number, definiteness test, determinant, eigenvalues eigenvectors, fill matrix, fraction free Gaussian, Hermitian transpose, inverse, Jordan form, minimum polynomials
- POLYNOMIALS: collect, divide, partial fractions, roots, sort, companion matrix

This Maple kernel which is included in Scientific Workplace operates in the background and is called via a menu item. The generated plots can be included in the document. This gives you a full word processor for marvelous printouts of formulas with their results and their graphical representation.