

THE Maple **ROOTS** Report

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The Newsletter from Waterloo Maple Software

Introducing...Maple V Release 3

Maple V Release 3 is here! This new, significantly improved version builds on Maple's reputation for symbolic and numeric computational power, graphics capabilities, and programming. Major new enhancements and features include an easy-to-use worksheet interface including export to LaTeX, mathematical robustness, interactive graphics, and a new help facility featuring keyword searches within help pages.

"This release of Maple V incorporates the results of exciting research in Computer Algebra from SCG in Waterloo, ETH in Zürich, and INRIA in Paris. We have paid attention to the needs of our customers by providing them with tools that are important to the advancement of their work," said Chris Howlett, Director of Research and Development. "Users of Maple V can now solve more problems than previously possible with computer algebra systems."

Many of Maple V Release 3's symbolic and numeric functions have been greatly enhanced. Significant work has been done in extending Maple's power in the areas of integration, exact solutions of equations, and manipulation of symbolic expressions. These changes make Maple V faster, more efficient, and robust, enabling users to solve even more problems. The solution of differential equations has been improved and includes two completely new algorithms for solving linear differential equations in addition to facilities for manipulation and working with incomplete solutions. Also, Release 3's redesigned

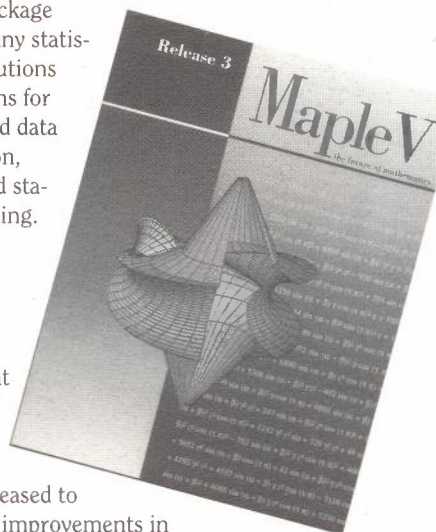
statistics package includes many statistical distributions and functions for sophisticated data manipulation, analysis, and statistical plotting.

"Proper choice of branch cuts has been a problem that affects all symbolic math systems. I'm pleased to see the new improvements in Maple that will use only reductions and simplifications that are 'provable'," said John Crow, member of the Technical Staff at an aerospace firm in Southern California. "I'm also impressed with the new capabilities for differential equations. It will make obtaining and manipulating solutions much more convenient."

Additional enhancements in areas such as graphics, help facilities, and Maple's worksheet interface have been made in Release 3. An improved interactive graphics package includes control of number of contours, line styles, fonts used for text, and symbols used for points, which allow for the production of professional documents. Help facilities now include keyword search capabilities making it easy to locate information on specific topics. Entire worksheets can be exported to LaTeX for publication quality presentations.

Maple V Release 3 for Windows has a number of significant enhancements, including a tool bar which is available on worksheet and plot windows. A status bar at the bottom of *all* windows shows information on menu items and buttons, while a status bar at the bottom of *worksheet* windows displays memory and CPU usage.

"The new tool bars make Release 3 much easier to navigate," said John Smirnios, a Maple beta tester. "I enjoy working with the new help facility. It's much more convenient and easier to use. Also, I found that Maple V Release 3 is consistent with the native Windows applications." (continued on page 2)



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Referral Contest

Calling all readers! Send us the name (or names) of a friend or colleague you believe will benefit from using our mathematical software applications—Maple, Theorist, Expressionist or MicroExpressionist—and we will enter your name into a draw. The contest runs until July 31; all entries must be received by this date to be eligible. The winner will be announced at the MSWS'94 banquet on August 11 (MSWS'94 takes place August 9-13 at Rensselaer Polytechnic Institute in Troy, New York). And while we are keeping the prize a surprise, we will say it's a winner too!

So, send in your entries now (using the ballot form enclosed, or a reasonable facsimile)—and enter as often as you wish. The only requirement is that you provide us with a different name and address each time!

Employee Recognition Awards

Waterloo Maple Software recently embarked on an Employee Recognition Award Program. Employees were nominated by their peers for "achieving excellence within their sphere of influence," and a short list of eight names was determined. Employees again nominated their choice from the short list, with the following results:

- 1st Prize: Christine Becker, Customer Services
2nd Prize: Karim Khamis, Quality Assurance
3rd Prize: Tim Tyhurst, Research and Development

Prizes included travel, accommodation, tickets to sporting and theatrical events, entertainment and dining vouchers and cash.

Congratulations everyone!

Produced By Waterloo Maple Software

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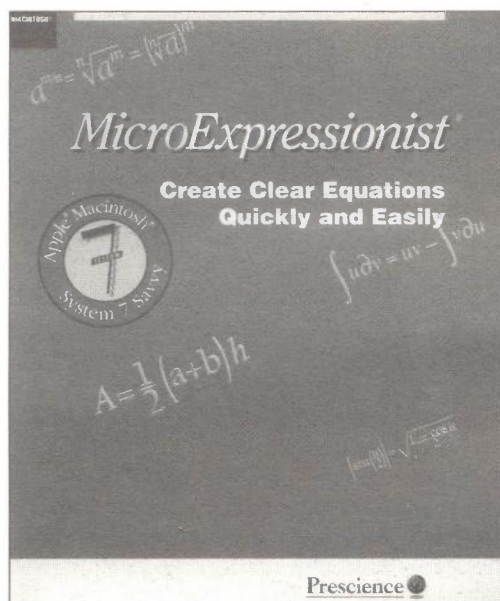
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Announcing MicroExpressionist

MicroExpressionist for the Macintosh began shipping in January. MicroExpressionist features an easy-to-read palette, direct cut and paste into presentation documents, a wide selection of scientific symbols and notation, and the same typeset quality output as the classic version of Expressionist. Designed for the beginner, MicroExpressionist has all of the essential features that most people who use equations need, and works with popular word processor, page layout, and presentation applications, enabling users to incorporate technical equations and symbols quickly and easily. MicroExpressionist can be ordered by calling 1-800-267-6583.



Maple V Release 3 continued

The Macintosh and Motif versions of Release 3 add improvements to the Help facilities, including keyword search capabilities that allow users to quickly locate Help topics. Also, plots can be saved in the widely adopted GIF file format.

Maple V Release 3 is now shipping for the Macintosh, DOS, Microsoft Windows, Sun, Alpha OSF/1, RS/6000, HP9000/700&800, DECstation, Intergraph, MIPS, and Silicon Graphics platforms. Call to order your copy today! Maple V Release 3 is available directly from Waterloo Maple Software, and internationally through Waterloo Maple Software GmbH, direct sales, distributors, dealers, hardware OEMs, and software publishing partners.

Watch for new platforms—such as PowerPC, Win 32S, NeXT, HP9000/300&400, LINUX, SCO UNIX, and others—to be released over the next few months!

MSWS'94 Update

Register early for the Third Annual Maple Summer Workshop and Symposium!

MSWS'94 will be held August 9 to 13 at Rensselaer Polytechnic Institute in Troy, New York. Be among the first 100 registrants and qualify to win a complimentary copy of both Theorist and Expressionist! In addition, all participants whose registrations are received prior to July 1 will receive a free MSWS'94 t-shirt! To register, complete and return the application form enclosed with this newsletter.

Program highlights:

- Plenary discussions
- Invited speakers:

Dr. Charles E. Campbell Jr. of NASA Goddard Space Flight Center
Expertise: Application of Maple V in robot design and analysis

Dr. Donald Hartig of the Mathematics Department, California Polytechnic State University—San Luis Obispo
Expertise: Theorist in the classroom

Dr. James V. Herod of the School of Mathematics, Georgia Institute of Technology
Expertise: Maple V for bio-mathematics and education

Ayowale Ogunye of Dow Chemical
Expertise: Maple V in industry

Dr. Glenn Sowell of the Department of Physics, University of Nebraska at Omaha
Expertise: Maple V in physics education

- High School panel, focusing on Maple and Theorist in the curriculum
- Exhibits and demonstrations, provided by partners, publishers, and hardware vendors
- Solutions corner—bring us your challenges!
- and much more!

This year's banquet will feature Dr. William H. Graves, who will address "Moving Toward a National Learning Infrastructure." Dr. Graves is Professor of Mathematics and Associate Provost for Information Technology at the University of North Carolina at Chapel Hill. He is also leading a national learning technologies initiative in his role as Visiting Fellow at EDUCOM in Washington.

We extend many thanks to those who submitted papers for this event; the response was excellent.

We're very excited about this year's workshop! Mark your calendars now; you'll want to be a part of MSWS'94!

Meeting
of the
Maple
Minds



Printed on recycled paper in
Canada 05/94

MAPLE

Waterloo Maple Software Restructures and Charts a New Course

There have been some enquiries recently about changes at Waterloo Maple Software, a result of our significant growth over the last two years. These changes have become necessary and position the company to fully promote and service our products worldwide. This note is to inform you of the changes that we believe will benefit our customers, distributors, and partners.

We would like to thank you for your continual support and share with you the significant changes that we have made. By restructuring, we are preparing to meet the demand and services that our customers have come to expect for our high quality products.

"These current changes will effectively give the company the tools we need to meet the growing challenges in the international software market," explained Prof. Gaston Gonnet, Chairman of the Board. "The mathematical and scientific market is experiencing strong growth at the current time. Waterloo Maple Software, through sales of its Maple V product and various licensing agreements, has become a leading player in this market."

New Management Team

A critical component of that restructuring is reflected in the management team that will guide and direct Waterloo Maple Software through the next period of our evolution. It consists of Mr. Steve Brown, Director of the Americas; Dr. Chris Howlett, Director of Research and Development; and Mr. Dieter Hensler, Managing Director of International Operations, who is also on the Board. Stepping down as CEO is Mr. Ron Neumann, who has decided to pursue his interests with other opportunities.

Waterloo Maple Software also welcomes two new members to the Board of Directors: Mr. Jack Sinclair, former Executive Vice-President (Corporate Services) of Bell Canada, and Mr. Wes Graham, Chairman of the Board and Chief Executive Officer of The WATCOM Group. The experience these gentlemen bring to the Board adds a new dimension to the growth of the company and is a strong acknowledgment of Waterloo Maple Software's growth as a major player in the mathematical software market. They join the current Board, consisting of Prof. Gaston Gonnet and Dr. Keith Geddes.

Business Development Opportunities

The mathematical software market is enjoying significant growth as it expands to all levels of education—from elementary school to postgraduate research. This growth is further fueled by the high interest in symbolic mathematics for commercial use and design engineering.

Last fall, the Ontario Ministry of Education made Maple V the standard mathematical software for high schools in Ontario. Similar agreements have been made in Europe, the United States, and in Great Britain. With these arrangements, Waterloo Maple Software has become a leader in the educational market and is now poised to further develop the high school mathematical software market.

Last year, Waterloo Maple Software acquired the San Francisco-based Prescience Corporation. Their educational mathematical software products, Theorist, Expressionist, and MicroExpressionist, will become an increasingly important part of the Waterloo Maple Software business. The acquisition of Prescience underlines the commitment Waterloo Maple Software has made to the growing educational market. That division will now function as a remote Research & Development operation responsible for user interfaces, and the full product line for the Macintosh and PowerPC platforms.

To take advantage of these business developments, Waterloo Maple Software management plans to implement a more focused approach to, a) provide a clearer direction for the continued growth of Maple V products; and, b) satisfy the diverse audience of Maple V users around the world. This will be accomplished by restructuring the company into three divisions: one division will handle the International market; another division will deal with the Americas; and a third division will deal with Waterloo Maple Software's strategic alliances and OEM partners. Each division will act as an autonomous business unit with full P&L responsibility.



Alliances

Of significant interest is the recently signed multi-million dollar agreement between Waterloo Maple Software and MathSoft, Inc. of Cambridge, Massachusetts. Under the terms of the agreement, MathSoft will have full licensing rights to a portion of the Maple V technology for Mathcad, their flagship product. And, an important strategic component of the agreement establishes MathSoft as Master distributor worldwide for the full Maple product.

The strategic partnership with MathSoft will create the next evolution of commercial applications using symbolic mathematics. "We believe this is a true indication of our continuous mutual support and delivery of highly efficient mathematical software," says Steve Brown, Director of the Americas.

Waterloo Maple Software is also involved in new directions, specifically the merging of various technologies for the teaching and productive use of mathematics, in the areas of research, design engineering, and the multimedia marketplace.

Announcing the Maple V Application Development Platform

Waterloo Maple Software is pleased to announce the Maple V Application Development Platform that enables developers to integrate the full power of Maple V Release 3's math and graphics routines into their software. For the MS-Windows environment, the Development Platform provides versions of Maple V which use either DLL or DDE to connect to other programs. Both versions can access the entire Maple V Release 3 library. Compatible with popular development languages and environments including C, C++, Visual BASIC, and Microsoft Word BASIC, developers can add the benefits of analytical solutions, infinite precision numerics, and advanced visualization to their programs. Interface builders such as Visual BASIC also allow users to easily incorporate custom user interfaces into the most powerful mathematical software available.

The potential range of application areas is limitless. Researchers in science and engineering can now seamlessly incorporate advanced symbolic approaches to analysis and design software. Consulting firms and solution integrators can now offer their clients custom symbolic solutions that directly communicate with existing software components. Educators can develop exciting demonstration and exploration modules with innovative curriculum-driven user interfaces.

The Development Platform for Windows is now shipping. Versions for the Macintosh, PowerMac, and UNIX will be available later this year. Pricing for the Development Platform starts at \$1,995US. Discounts are available for educational institutions, current users, and volume purchasers. Contact Waterloo Maple Software for details.

A special E-mail address—advantage@maplesoft.on.ca—has been created to support users interested in using the Maple V Application Development Platform.

Events Schedule 1994*

Waterloo Maple Software will be hosting or participating in a flurry of activities—worldwide—in the next few months!

May 5-7 ECOO'94—Toronto, Ontario

May 6-8 Theorist Conference at California Polytechnic Institute

May 11 Campus Day at Queen's University

May 11 Campus Day at Ohio State University

May 11-17 Invited talks at the National University of Singapore and the National Institute of Education (NIE) at Nanyang Technological University

May 12 Campus Day at University of Toledo

May 12-14 OAME'94—Queen's University

May 13 Campus Day at University of Michigan

May (TBD) Campus Day at Rensselaer Polytechnic Institute

May 17 Campus Day at SUNY @ Albany

May 17-21 Invited talks at Universiti of Malaya @ Kuala Lumpur and Universiti Sains Malaysia @ Penang, Malaysia

May 19 Campus Day at SUNY @ Binghamton

May 21-June 4 Presentations in Taiwan at National Chung Hsing University, Taichung; National Cheng Kung University, Tainan; National Tsing Hua University, Shing Tsu; National Central University, Chung-Li

May (TBD) Campus Day at Rochester Institute of Technology

June 4-19 Presentations in Japan at Tokyo Institute of Technology, Tsukuba University and at the annual meeting of the Japan Society of Symbolic and Algebraic Computation

June 11-13 CMS Summer Meeting, University of Alberta

June 19-30 Presentations in Korea at National Seoul University and Korean Advanced Institute of Science and Technology

June 26-29 ASEE'94—Edmonton, Alberta

July 10-12 Informatica Expo '94—Monterrey, Mexico

July 11-15 IMACS—Atlanta, Georgia

July 25-26 ICOTS'94—Marrakesh, Morocco

July 25-29 SIAM'94—San Diego, California

Aug. 2-5 MacWorld'94—Boston, Massachusetts

Aug. 9-13 Maple Summer Workshop & Symposium 1994—Troy, New York

Aug. 10-20 ICM-China Regional Conference on Mathematical Education Shanghai, China

Sept. 20-22 MacWorld'94—Mexico City, Mexico

Sept. 25-28 Softworld'94—Fredericton, New Brunswick

Oct. 31-Nov. 2 EDUCOM'94—San Antonio, Texas

Nov. 17-20 ICTCM'94—Orlando, Florida

* subject to change

Implementing Computer Algebra Systems in your Classroom—with Little or no Hassle

Submitted by Reid Pinchback, MIT

If you have a computer algebra system (CAS) on your campus, here are a few helpful hints to create a successful educational experience for your faculty and students:

• **Create good support mechanisms for faculty and students.** It will be time-consuming and frustrating to learn to use any CAS properly. You will need to mitigate this, perhaps by creating "getting started" guides for newcomers. Also, you should have at least one person responsible for dealing with queries, bug reports, and training of faculty and teacher's assistants.

• **You will need to get faculty to work with you to incorporate the software effectively into their coursework.** What you can't have are situations where instructors tell students, "There is this Maple thing on the computer, which I don't know how to use, but here is your homework assignment. Good luck!" If a faculty member isn't going to work to redesign their course a little to incorporate CAS use properly, they are probably better off not requiring students to use a CAS at all, particularly for freshmen courses.

• **Use a CAS for more than homework.** Using a CAS as an instructional tool in the class or lab can be very effective.

• **Give yourself time.** It takes an easy two or three years to get rolling on incorporating complex application software into a broad range of educational activity. Target one or two courses with good and pedagogically motivated instructors to initially integrate some CAS use, but without going overboard. Use the first year as an opportunity to learn about the CAS and to get your own support mechanisms into shape. In that year, make lots of noise to tell students, faculty, and teacher's assistants that the CAS is available, but don't have a bunch of courses forcing it down students' throats. Towards the end of the first year you can use the experience to start designing courses more effectively to integrate the CAS into teaching and homework.

• **Don't turn a hammer into a screwdriver.** In other words, don't expect a CAS to provide all of your instructional courseware needs. CAS languages are not, in my opinion, the way to teach computer programming, at least not in isolation from other computer languages. They are also not effective for heavy-duty numerical or statistical computation. I also wouldn't use a CAS as the only tool when teaching a graduate course on computer graphics.

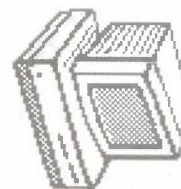
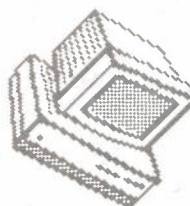
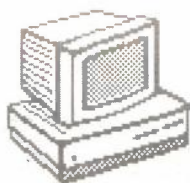
Bottom Line: Make your CAS just one of several useful tools available in the toolbox. Spend some time thinking about what those other tools should be, and how you would support integrated use of those tools.

CeBIT '94—Business with Canada

CeBIT, Europe's largest computer show, took place in Hannover, Germany from March 16-23. Waterloo Maple Software presented its products in the Canadian pavilion with active participation from two distributors, Scientific Computers GmbH of Germany and COMSOL AG of Switzerland.

Allan Bonadio, Founder and Chief Technologist of Prescience Corporation, a subsidiary of Waterloo Maple Software, presented Theorist and Expressionist to a large audience. "There are a lot of people who are really looking for an easy-to-use math program like Theorist," stated Allan. "We'll have the Windows version ready to roll this fall."

Waterloo Maple Software's newest release, Maple V Release 3, was also officially announced at CeBIT. Users, publishers, and authors were impressed with the new Release 3 features and enhancements. Release 3 is available through distributors; call our Heidelberg office for the number of the distributor nearest you.



MAPLE

Campus-wide Sites Update

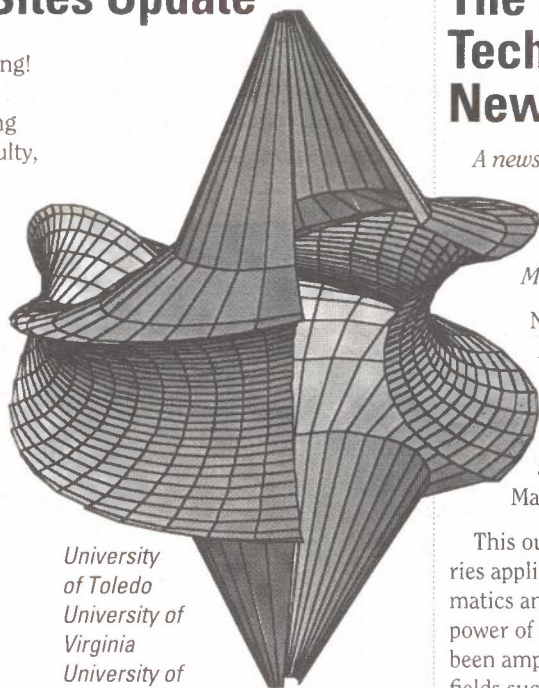
The Maple user base keeps growing! Since our last issue of Roots, the following campuses are now using Maple and training students, faculty, and researchers at:

Canada

Carleton University
Concordia University
Queen's University
Royal Roads Military College
Simon Fraser University
University of Alberta
University of Ottawa
York University

United States

Albany State College
Armstrong State College
Brigham Young University
California Polytechnic State University
Clayton State College
Dalton College
Dartmouth College
Gainesville College
George Mason University
Georgia Institute of Technology
Georgia Southern University
Hartford Graduate Center
Indiana University—Purdue
University at Fort Wayne
Indiana University—Purdue
University at Indianapolis
Lamar University
Middle Georgia College
Mississippi State University
North Georgia College
Princeton University
Purdue University
Rutgers, The State University of New Jersey
San Diego State University
Southern College of Technology
SUNY at Binghamton
SUNY at Buffalo
SUNY at Geneseo
SUNY at Stony Brook
Texas A&M University at Kingsville
Texas Tech University
University of Alabama at Tuscaloosa
University of Colorado at Boulder
University of Colorado at Colorado Springs
University of Florida
University of Illinois at Chicago
University of Maryland at Baltimore County
University of Missouri at Rolla
University of Missouri at St. Louis
University of Nebraska at Lincoln
University of Nebraska at Omaha



University of Toledo
University of Virginia
University of Wisconsin at Madison
University of Wisconsin at Milwaukee
Valdosta State University
Virginia Polytechnic Institute
West Georgia College

Europe

Bergische Universität GH Wupper, Germany
Cambridge University, United Kingdom
Edinburgh University, United Kingdom
Exeter University, United Kingdom
Jozsef Attila University, Hungary
Masaryk's University Brno, Czech Republic
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Technische Universität Dresden, Germany
Universität Mannheim, Germany
Universität Stuttgart, Germany
Universität Tübingen, Germany
Universität Ulm, Germany
Université de Nice, France
University of College Cork, United Kingdom
University of East Anglia, United Kingdom
University of Hertfordshire, United Kingdom
University of Kent, United Kingdom
University of Oslo, Norway
University of York, United Kingdom

Japan

Chiba University

The Maple Technical Newsletter

A newsletter sponsored by Waterloo Maple Software for the communication of applications among creators and users of Maple software.

Not just a newsletter...

MapleTech is an applications periodical providing an invaluable forum for the growing list of users of applications written in the Maple language.

This outstanding analytical tool carries applications not only in mathematics and physics—in which the power of symbolic computation has been amply demonstrated—but in fields such as biology, chemistry, finance, and engineering, as well as many other scientific, technical, and industrial endeavors. A free sample copy is available on request.

For Order Information

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\$41.00 Institutional Rate

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Switzerland

NSF Grants? Don't Forget Maple Discounts!

If you are applying for a National Science Foundation (NSF) grant or have received approval for your mathematics or science project, Waterloo Maple Software will support your efforts. Choose Maple V or Theorist for your mathematical software needs, and we will provide an additional 10% discount off your academic license fee!*

For further information, please contact your Waterloo Maple Software representative today at 1-800-267-6583.

* applies only in the US

Book List

We've added the following new titles to our ever-growing Maple resources:

Calculus and Maple V®

R. McLaughlin
(Saunders College Publishing)
ISBN 0-03-096778-3

Erste Schritte mit Maple

W. Burckhardt (Springer-Verlag)
ISBN 3-540-56649-X

Maple V Release 2

Michael Kofler
(Addison-Wesley Verlag Deutschland)
ISBN 3-89319-635-8

Maple V Release 2 Referenzhandbuch

A. Spieth (International Thomson Publishing)
ISBN 3-929821-73-7

Precalculus Investigations using Maple® V

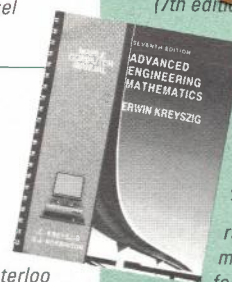
D.M. Mathews and K.E. Schwingendorf
(Harper Collins College Publishers)
ISBN 0-673-99410-4

Solving Problems in Scientific Computing Using Maple and MATLAB®

W. Gander and J. Hrebicek (Springer-Verlag)
ISBN 0-387-57329-1

Maple Computer Manual for Advanced Engineering Mathematics 7th Edition

E. Kreyszig, E.J. Norminton
(John Wiley & Sons, Inc.)
ISBN 0-471-31126-X
The Maple Computer Manual is a supplement to the classic text Advanced Engineering Mathematics (7th edition). This book is a leg-



endary course text for engineering math courses in all disciplines, and an invaluable reference for researchers and practicing engineers. Topics span the entire range of engineering mathematics—from differential equations to

numerical methods to statistics. The Maple Computer Manual is a 417-page book consisting of hundreds of Maple V-based examples for almost every section of the book. This book represents the most comprehensive collection of Maple V examples for engineering mathematics.

The New Maple/Prescience Info Server

Now available by anonymous ftp from <ftp.maplesoft.on.ca> :

The Info Server is an ftp site containing the Maple Share Library, demos, general information about Maple, Theorist and Expressionist, and support information.

Some of the things you can find in the Info Server:

- Maple V Release 3 for DOS and Windows demo
- Theorist demo
- Expressionist demo
- Information about the Theorist Gopher Server
- Maple Sample Engineering Worksheets
- Answers to common support questions
- Maple availability lists
- List of Maple books and manuals
- and much more

Information is updated regularly.

If you have any questions about the Maple/Prescience Info Server, please contact Waterloo Maple Software Technical Support at support@maplesoft.on.ca .

To contact the Info Server:

Use ftp at your site to contact <ftp.maplesoft.on.ca> .

Once the connection is established, enter your user name as anonymous, and use your internet mail address as the password.

After you have successfully logged onto the remote computer, you can use the commands `ls` and `cd` to list and change directories, respectively. The 'get filename' command of ftp causes the specified file to be copied to your computer. The `quit` command closes the remote connection and concludes the ftp session.

Note: To transfer binary files from the Share Library, make sure that you set the file type to binary (with the 'binary' command).

Distributor Update

Waterloo Maple Software welcomes the following new distributors:

Australia

SIR Pty Ltd
10-18 Cliff Street
Milsons Point
NSW 2061
Contact: Rohan Lewis
Tel: +61 2 929 7466
Fax: +61 2 929 7498
E-mail: sir@external.unsw.edu.au
or sir@usage.csd.unsw.oz.au

Brazil

TeraSys Informatica De Alto
Desempenho Ltda.
Rua Rego Freitas, 245 - Cj. 21
01220-010 - Sao Paulo - SP
Contact: Wills C. Damasio
Tel: +55 11 221 4570
Fax: +55 11 221 4570
E-mail: wills@tsi000.terasys.insp.br

Denmark

Magic Systems
Vendersgade 26
DK-1363 Copenhagen
Contact: Per Hæstrup
Tel: +45 33 14 16 88
Fax: +45 33 14 16 87

Korea

Kimhua Technologies Ltd.
Room #302, Sungmi Building
740-18 Banpo 1 Dong
Suhcho-Gu
Seoul 137-041
Contact: Hoyoun Kim
Tel: +82 2 517 1257 or 1258
Fax: +82 2 517 1259

Mexico

EduMac
Jordaens 34
Col. Nochebuena Mixcoac
03710
Mexico D.F.
Contact: Juan Manuel López
Garduño
Tel: +525 611 7613 or 7667
Fax: +525 563 4845

Republic of South Africa

OSIRIS Technical Systems (Pty) Ltd
PO Box 6496
Ground Floor, Meerlus Building
263a West Ave.
Verwoerdburgstad
Contact: Stef de Plessis
Tel: +27 12 663 4500
Fax: +27 12 663 6114

Spain

AddLink Software Cientifico
C/Valenci, 404 entlo. 1. 08013
Barcelona
P.O. Box 24129
08080 Barcelona
Contact: Ahmed Pria
Tel: +34 3 415 4904
Fax: +34 3 415 7268

and announces...

the opening of a new office in Singapore to serve the Asian market:

541, Orchard Road
Liat Towers #10-04
Singapore 0923

Director: Stephen Yee
Tel: +65 735 6268
Fax: +65 482 2490

Distributor Information Update

France

Simulog
Contact: Christophe Garnier
Tel: +33 1 30 12 27 30
E-mail: garnier@simulog.fr

Japan

Cybernet Systems Co. Ltd.
Nissay Ottawa Building (6-9 floors)
15-6 Otsuka 2-chome
Bunmkyo-ku
Tokyo 112
Tel: +81 3 5978 5400
Fax: +81 3 5978 5440

The Netherlands

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Canada FIRST

Canada FIRST (For Inspiration and Recognition of Science and Technology) is a national non-profit organization whose primary mandate is to stimulate Canadian youth to pursue education in math, science and technology. The inaugural event was launched in March at the spring Hobby Show in Toronto, Ontario. One of the competitions—"Rug Rage"—was a team-based, cooperative effort pairing high school students and their teachers with leading design engineers. The challenge was to design and build remote controlled robots—a project which showcased science and technology in a format teens understand: competitive sport. Nine teams involving more than 200 students from 16 high schools, and more than 60 mentors from high schools, post secondary institutions, and corporate sponsors participated in the event.



Waterloo Maple Software is pleased to have been a corporate sponsor for this event, supporting Waterloo Collegiate Institute's VIKINGS. The team was com-

prised of 55 students, 8 faculty and engineers. Everyone worked diligently and enthusiastically for 6 weeks in preparation for the competition. Despite the setback of faulty electronics parts which prevented successful completion in the event, both Waterloo Collegiate and Waterloo Maple Software were awarded the coveted "Chairman's Award"—presented to the sponsor which is judged to have created the best partnership effort between a school and university or between a school and business. Judging criteria included the level of student participation, teamwork, sportsmanship, team spirit, creativity of effort, and overall cooperation and effectiveness between school and partner.

Design Contest Winner

Waterloo Maple Software held its first design contest in 1993. The contest was announced at the Maple Summer Workshop and Symposium in June, and closed November 30. Graphic designs, which had to be created using Maple V Release 2, were to make a statement about Maple, either the product or the company.

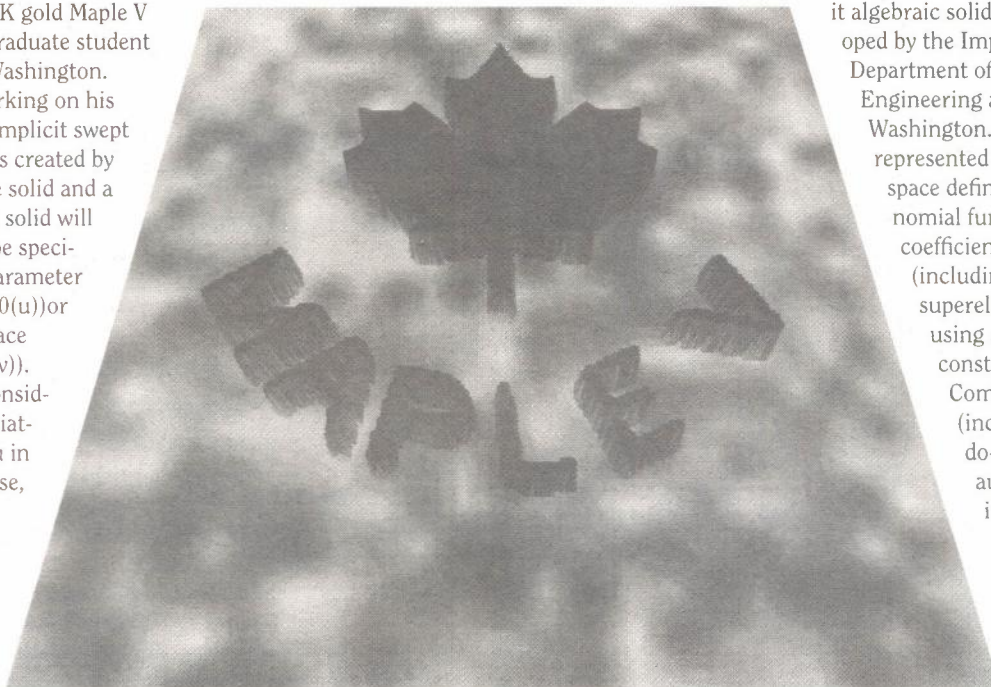
The winner of a 14K gold Maple V pin is Mark Ens, a graduate student of the University of Washington. Mark is currently working on his thesis in the field of implicit swept solids. A swept solid is created by specifying a primitive solid and a path along which the solid will move. The path can be specified as either a one parameter curve $(x_0(u), y_0(u), z_0(u))$ or a two parameter surface $(x_0(u,v), y_0(u,v), z_0(u,v))$. By simultaneously considering the solids associated with all values of u in the one parameter case, or u and v in the two parameter case, one obtains a family of solids known as a parametric solid.

The surface, which is not associated with a particular family member, but which lies on and is tangent to a family member, is known as the envelope. One obtains the equation of the swept solid by removing the free parameters from the defining function of the primitive solid and the tangency conditions. This removal is typically accomplished through the use of the resultant function. Since the

entire process involves manipulating polynomial equations, it is ideally suited for a symbolic algebra package such as Maple.

The equation of the maple leaf and text sent in for the contest is actually a radius function for a surface swept solid. It was generated using a package of Maple tools for implicit algebraic solid modeling (ASM) developed by the Implicit Solids Group in the Department of Mechanical Engineering at the University of Washington. In ASM, a solid is represented as an algebraic half-space defined by an implicit polynomial function with rational coefficients. Primitive solids (including broad families of superellipsoids) are combined using a tree structure as in constructive solid geometry. Composition operations (including algebraic pseudo-Boolean operations with automatic surface blending) are implemented by functionals which provide an algebraic defining function for the resulting solid. Coordinate transformations are provided through functional operators for general

rigid body displacements including rational rotations, translations, and scaling. Object display/rendering is achieved using either an implicit-plot3d function or ray-tracing.



Award winning design by Mark Ens; a graduate student of the University of Washington

The PWS NOTEBOOK Series™

The PWS NOTEBOOK Series™ facilitates the incorporation of problem-solving and graphing technology into your calculus courses. These electronic study guides provide an easy bridge between textbook and technology for mathematics and engineering students. On a single 3 1/2" disk, priced lower than most study guides (net price to bookstores: \$10US), students can learn to graph and solve calculus problems with ease, using the advantage of computer algebra applications.

The Notebooks take examples and problems from the associated textbooks; add helpful hints on using the technology to explore, graph, and solve problems; and place the problems in the worksheets of Maple or Theorist. Problems have been chosen that encourage exploration and maximize the graphing and problem-solving benefits of Maple and Theorist.

The Notebooks' organization mirrors that of the texts, with chapter and section headings. Each section includes one fully worked out example with problem-solving hints, followed by ready-to-work exercises. Notebooks are primarily designed as an electronic study tool for students; problems from the Notebooks are also ideal for classroom problem-solving demonstration when paired with an LCD panel for overhead projection.

Maple Notebooks (more to come in '95):

- ISBN 0-534-93635-0 Swokowski, Olinick & Pence: **Calculus 6/e** (Macintosh)
- ISBN 0-534-93634-2 Swokowski, Olinick & Pence: **Calculus 6/e** (Windows)
- ISBN 0-534-93942-2 Dick & Patton: **Calculus of a Single Variable** (Macintosh)
- ISBN 0-534-93943-0 Dick & Patton: **Calculus of a Single Variable** (Windows)

Theorist Notebooks (all Macintosh):

- ISBN 0-534-93636-9 Swokowski, Olinick & Pence: **Calculus 6/e**
- ISBN 0-534-93940-6 Dick & Patton: **Calculus of a Single Variable**
- ISBN 0-534-93554-0 Tan: **Applied Calculus, 3/e, Applied Finite Math, 4/e, Calculus for Managerial, 3/e, College Math, 3/e**
- ISBN 0-534-93712-8 Swokowski & Cole: **Precalculus: Functions and Graphs, 7/e**
- ISBN 0-534-94250-4 Askeland: **Science & Engineering of Materials, 3/e**

Dear Dr. Roots

Dear Dr. Roots:

I have a 2D plot of 5 different curves, and I'm having a hard time telling them apart. Is there any way I can change the line styles used to plot the curves?

Maple V Release 3 supports some new options in plots: the ability to change the thickness of a line, the style of a line, and the point symbol used in a plot.

The thickness option allows you to specify the thickness of the line used to draw the curve. The `linestyle` option allows you to choose between a solid line, and various dashed patterns. The `symbol` option allows you to choose between several symbols used for the points in plots—the choices are BOX, CROSS, CIRCLE, DIAMOND and POINT.

Try these examples:

```
>with(plots):
>p1:=plot(sin(x),x=0..2*Pi,
thickness=1, linestyle=3):
>p2:=plot(cos(x),x=0..2*Pi,
thickness=3):
>display({p1,p2});
>points_list:=seq([cos(Pi*T/40),sin(Pi*T/40),T/40],
T=0..40):
>pointplot(points_list, symbol=DIAMOND,
axes=BOXED);
```

You can also now specify the fonts, styles and sizes for axes labels and plot titles. See the help page `?plot, options` for more information.

Dear Dr. Roots:

When I try to read my Maple V Release 2 .m files, I get the message:

Error, filename.m is an incorrect or outdated .m file

How can I get the information from my Release 2 .m files into Release 3?

There are two applications shipped with Release 3 to help transfer this information.

The `m2src` application takes .m files from Release 2 and translates those files into Release 2 source files.

Since the use of `local` and `global` changed from Release 2 to Release 3, we have also provided an application called `updtsrc` to translate Release 2 source code into the equivalent Release 3 source code.

For more information about using these applications for your particular platform, see the Getting Started booklet that was sent along with Release 3.

Dear Dr. Roots,

When I calculate something like $(-8)^{(1/3)}$ in Release 3, it gives me a complex root. For example:

```
> (-8)^(1/3);
(-8)^(1/3)
> simplify(");
1 + I sqrt(3)
```

How do I get the real root?

Release 3 introduced a routine called `surd` to find the real roots of a negative number. For example:

```
> readlib(surd);
> surd(-8,3);
-8^(1/3)
> simplify(");
-2
```

For more information see the help page on `surd` by entering `?surd` at the Maple prompt.

Dear Dr. Roots:

I have some really tricky Maple questions; where can I get more information?

Check out Michael Monagan's new "Tips for Maple Users" column in the MapleTech Newsletter. It contains some great advanced Maple tips and techniques, and provides an insight into the "behind the scenes" workings of Maple. If you don't currently receive the MapleTech Newsletter, see the order information on page 5 of this issue.

Don't forget about the Maple User Group, an E-mail list for discussion of Maple issues. Send E mail to:

`maple_group@daisy.uwaterloo.ca` to be added to the list. The Internet newsgroup `sci.math.symbolic` is also a good resource for information about Maple.



Dr. Roots and the Technical Support Team

can be contacted by fax at

(519) 747-5284 and via E-mail at

`support@maplesoft.on.ca`

We'd like to hear from you. If you have comments about Maple or suggestions for future enhancements, let us know!