Kris H. Green

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Education

- **Ph.D. Applied Mathematics**, University of Arizona, May 1999. Dissertation: *Gravitational Aspects of Tachyon Domain Walls*. Advisor: W. J. Cocke.
- **MS Applied Mathematics**, University of Arizona, December 1996.
- **BS Engineering Physics**, University of Tennessee, *Cum Laude*, May 1994. Honors Thesis: *An Analysis of Planetary Helium*.

Professional Experience

- **Associate Professor (tenured)**, St. John Fisher College, Department of Mathematical and Computing Science. September 1999 to present. Granted tenure and promotion in June, 2005.
- **Director of the Science Scholars Program,** St. John Fisher College. Spring 2002-Spring 2008.
- **Project NExT Fellow and Consultant**. MAA Project Next, 1999-present (Brown University). Consultant to 2008 Fellows.
- **Graduate Associate in Teaching**, University of Arizona, Mathematics Department, August 1994 to May 1999. Primary teacher responsible for a variety of courses over five years.
- **Adjunct Faculty**, Pima Community College Summer Bridge Program, West Campus, Summer 1997. Taught basic mathematics to help first generation college students make the transition to college.
- **Math and Science Tutor**, University of Tennessee, Knoxville, Sept. 1992-Dec. 1993. Math, physics, and engineering tutor for the Educational Advancement Program, providing non-traditional and disadvantaged students with tutoring for free.
- **Summer Science Fellow**, University of Tennessee, Physics Department, Summer 1993. Worked under Dr. J. Burgdorfer and Dr. J. Mueller numerically studying the excited states of helium.
- **Summer Science Fellow**, University of Tennessee, Physics Department, Summer 1992. Worked under Dr. A. Sanders studying ways to minimize self-gravitation of microgravity crystal growing experiments in a satellite.

Peer Reviewed Articles

1. "Can an Interdisciplinary Science Learning Community Course improve Scientific Reasoning in Freshman science Students?", with Tim Franz. Submitted July 2009. Accepted Sept. 2010 for publication in *Journal Of The First-Year Experience & Students In Transition*.
2. "Matching functions and graphs at multiple levels of Bloom's revised taxonomy". *PRIMUS: Problems, Resources, and Issues in Mathematics Undergraduate Studies*, 2010, 20: 3, 204-216.
3. "If Mowat and Davis are correct, then teaching is hard", with Barney Ricca, *Complicity*, 2010, 7(1): 63-69.
4. "Mathematical Reasoning in Service Courses: Why Students Need Mathematical Modeling Problems", with Allen Emerson, *The Montana Mathematics Enthusiast*, 2010, 7(1): 113-140.
5. "Team-based resource modeling: Projects that teach more than mathematics content", with Ryan Gantner, *The UMAP Journal*, 2009, 30(4): 413-428.
6. "Pedagogical content knowledge as a foundation for an interdisciplinary graduate program", with Diane Barrett. *Science Educator*, 2009, 18(1): 17-28.
7. "Using spreadsheets to discover meaning for parameters in nonlinear models". *Journal of Computers in Mathematics and Science Teaching*, 2008, 27(4): 423-441.
8. "What's in a name? *The Matrix* as an introduction to mathematics". *Math Horizons*, September 2008, 18-21.
9. "Reorganizing freshman business mathematics II: authentic assessment in mathematics through professional memos", with Allen Emerson. *Teaching Mathematics and its Applications*, 2008, 27(2):66-80.
10. "Reorganizing freshman business mathematics I: background and philosophy", with Allen Emerson. *Teaching Mathematics and its Applications*, March 2008, 27(1): 11-23.
11. "Pivot tables can turn your record keeping around." *Mathematics Teacher*, May 2008, 101(8): 678-81.
12. "Visualizing surfaces and contour diagrams through a classroom activity". *Mathematics and Computer Education*. 41(3). Fall 2007.
13. "A new framework for grading", with W. Allen Emerson. *Journal of Assessment and Evaluation in Higher Education*. 32(4). August 2007.

14. "Measuring the Doppler effect on a shoestring budget". *The Science Teachers Bulletin* from Science Teachers Association of New York State (STANYS). Spring 2007.
15. "Promoting mathematical communication and community via Blackboard", with Erica Johnson. *PRIMUS: Problems, Resources, and Issues in Mathematics Undergraduate Studies*, volume 17, number 4, 2007.
16. "A solution to Einstein's field equations for a tachyonic gas: possible astrophysical applications", with W. John Cocke. *Astrophysics and Space Science*. 288(4): 431-450.
17. "Creating successful calculus writing assignments", PRIMUS: *Problems, Resources, and Issues in Mathematics Undergraduate Studies*, Volume 12, Number 2, June 2002.
18. "Compact Gravity Wave Detector." (with Dr. Munawar Karim). http://arXiv:gr-qc/0209015v5 28 August 2003.
19. "Supernova data consistent with dark energy as cosmological gravitational radiation (got dark energy?)" (with Dr. Munawar Karim and Dr. Ashfaque Bokhari). Submitted October 13, 2008. (in review)

Invited Book Chapters

B1. "Participating in the Hyperlinked Curriculum", in *Handbook of Curriculum Development*, Limon E. Kattington (ed). 2010. Pp. 135 – 175. Part of the *Education in a Competitive and Globalizing World* Series.

B2. Two chapters to appear in *Mathematics and Popular Culture*, Jessica K. Sklar and Elizabeth S. Sklar (eds.). McFarland Publishing. Anticipated in print late 2010 or early 2011:
   a. "What's in a name: *The Matrix* as an introduction to mathematics"
   b. "Coming out of the dungeon: Mathematics and *Dungeons and Dragons*"

Other Publications

- NCATE/NCTM SPA reports for Undergraduate Mathematics 7-12 Teacher Preparation Program and Graduate GMST 7-12 Mathematics Teacher Preparation Program (Two reports, submitted Fall 2010)
- NCATE Program Report and two rejoinders: Undergraduate 7-12 Mathematics Teacher Preparation Program at Fisher. 2003.
- NCATE Program Report and two rejoinders: GMST 7-12 Mathematics Teacher Preparation Program at Fisher. 2003.
- NCATE Initial Program Report: GMST 7-12 Science Teacher Preparation Program at Fisher. 2003.
- "It's not the fall that gets you, it's the sudden stop at the end", Report for *Southeastern Caving and Rescue Group*, Spring 2002.
- "An analysis of planetary helium", *Research Papers from the 1993 Science Alliance Research Fellows Program in Physics*, University of Tennessee, 1993.
- "Mathematically minimizing gravity", *Research Papers from the 1992 Science Alliance Research Fellows Program in Physics*, University of Tennessee, 1992.

Presentations

Contributed Paper Sessions

- "Using boxplots and histograms to draw inferences". AMS/MAA Joint Meetings: January 2007.
- "Spreadsheet training for pre-service mathematics teachers". PMET mini-conference at Oswego, NY. June 2006.
- "How a writing assignment changed our understanding of quantitative literacy". With Allen Emerson. AMS/MAA Joint Meetings: January 2006.
- "A new framework for grading open-ended problem solutions". With Allen Emerson. AMS/MAA Joint Meetings: January 2006.
- "How a writing assignment transformed a writing intensive mathematics course for business students". With Allen Emerson. MAA Seaway Section Meeting: Fall 2005.
- "How Rhetoric Transformed a Business Mathematics Course". With Allen Emerson. AMS/MAA Joint Meetings: January 2005.
- "A CRAFTY approach to mathematics for business management students". With Allen Emerson. AMS/MAA Joint Meetings: January 2005.
- "A New Vision of Mathematics for Management Students". With Dr. Allen Emerson. AMS/MAA Joint Meetings: January 2004.
- "I Saw Two Paths: Parallels Between the MET Document and the MST Major at SJFC". AMS/MAA Joint Meetings: January 2001.
- "Mathematics, Science and Technology Integration for Teachers". AMS/MAA Joint Meetings: January 2001.
- "Group Journal Writing Using BlackBoard CourseInfo". AMS/MAA Joint Meetings: January 2001.

- "Three Different Methods for Incorporating the Internet". Mathfest: August 2000.
- "Planetary States of Helium". Summer Science Alliance Mini-Conference. University of Tennessee. August 1993.
- "Mathematically Minimizing Gravity". Southeast Regional Students of the American Physical Society Meeting. Oak Ridge National Laboratory. Spring 1993.
- "Mathematically Minimizing Gravity". Summer Science Alliance Mini-Conference. University of Tennessee. August 1992.

Poster Presentations

- "An Alternative Mathematics Course for Business/Management Majors". AMS/MAA Joint Meetings: January 2002.
- "Alternative Worlds: Building Planets for Fun and Understanding". LC Workshop at St. John Fisher College. Fall 2001.
- "Between Science Fiction and Mathematical Fact: the Tachyon". AMS/MAA Joint Meetings: January, 2000.
- "Interactions of Tachyon Walls with Galaxies". Mathematics Graduate Day Poster Session. University of Arizona. Spring 1999.

Workshops

- Mathematics, Science and Technology Institute. July 6-9, 2010, August 18-21, 2009. August 20-24, 2008. St. John Fisher College (Rochester, NY). Funded by Rochester Area Colleges Center for Excellence in Math and Science. With Dr. Diane Barrett and Brenda Green. [sponsored by grants from the Rochester Area Colleges Center for Excellence in Mathematics and Science]
- Helping to organize and present in track 3: Professional Learning Communities at the 3rd Annual Rochester Educator Collaborator Event, sponsored by Rochester Area Colleges Center for Excellence in Mathematics and Science (Fall 2009).
- "Using online discussion boards to teach mathematics". Project Next Workshops (offered twice). Mathfest 2008 (Madison, WI).
- "The Hardest Part of Teaching". PETAL Workshop for St. John Fisher faculty. March 2003.
- "The Write Way to Learn Mathematics I and II". Workshops for Pittsford, Penfield and Brighton Middle and High School Mathematics Teachers. With Casey Vaccaro. November 2000.
- "Communicating Mathematics". Workshop for Webster Middle and High School Mathematics Teachers. March 22, 2000.
- Tech Prep Sessions for Area High School teachers (with Beth Napoli). St. John Fisher College. Fall 1999 – Spring 2000.
- RIMS Workshop for High School Students: "Einstein's Way Cool Notion of Motion" (with Brian Walton and Guadalupe Lozano). University of Arizona. October 17, 1998. Repeated on October 24, 1998.

Panel Discussions and Swap Sessions

- "Using technology to teach mathematics". With Robin Cruz & Mike Mays. Mathfest 2008: Project Next Session (Madison, WI).
- "Using teams and group work in the classroom: A Panel presentation and discussion". With Lynn Donahue, Tim Franz and Bill Waddell. PETAL Workshop for St. John Fisher faculty. December 8, 2005.
- "Overview of MST Courses at SJFC". AMS/MAA Joint Meetings: Project Next Sharing Session on Teacher Education Programs. January, 2000.
- "Mathematics – The Phantom Menace". Mathematics Graduate Day Panel Discussion. University of Arizona. Spring 1999.

Other Presentations

- "The Greenest talk on campus". Math Awareness Month at Fisher: April, 2009
- "You're right to vote…but how?" Math Awareness Month at Fisher: April, 2008
- Presentation to the Business College regarding the content and philosophy of MST 130. Discussion on how to meet the needs of the management students and faculty with the course.
- "Experiences with Teaching Writing Across the Curriculum". PETAL workshop at Fisher: January 2003.
- "An Inflationary (Balloon) Model of the Universe". Math Awareness Month at Fisher: April 26, 2001.
- "Overview of MST Courses" (with Carol Freeman). CCLI Consortium: SUNY Oswego. October 1-2, 1999.
- "The Roots of MAPLE Run Deep" (with Ed Alexander). Entry Level Mathematics Colloquium: Univ. of Arizona. Spring 1999.
- "In This Episode, MacGyver Builds a Time Machine Out of String". Applied Math Graduate Student Brown Bag: University of Arizona. Fall 1998.

- First Year Graduate Student Review: Vector Calculus. University of Arizona. September 1998.
- First Year Graduate Student Review: Vector Calculus (with Karl Bauer). University of Arizona. September 1997.
- First Year Graduate Student Review: Phase Plane Analysis. September 1997.
- Review of Calculus: Paid by Hughes Engineering to help with returning masters and MIS students. Tucson, AZ. Fall 1997.
- "Kaluza-Klein Theories in Relativity". Applied Math Graduate Student Brown Bag: University of Arizona. Fall 1996.
- "Fish and Relativity Stink in Three Days: An introduction to Relativity for Mathematicians". Applied Math Graduate Student Brown Bag: University of Arizona. Spring 1996.

Teaching Experience

St. John Fisher College, Rochester, NY – Undergraduate Courses (MATH, MSTI, other)

- *Calculus I* (3), *Calculus II* (3), *Calculus III: Multivariable Calculus* (3). Taught using Hughes-Hallett, et al. reform text.
- *Differential Equations* (3). Modeling-based, using MAPLE or other software to explore ODEs and applications.
- *Discrete Mathematics for Computer Science*. Focus on applications, including hands-on circuit building.
- *Introduction to Mathematical Modeling* (2, 3). Spreadsheet-driven approach to discrete dynamical systems.
- *Mathematical Modeling and Quantitative Analysis* (2, 3). Spreadsheet driven, data analysis course for business majors.
- *Mathematical Explorations in the Real Numbers*. Problem-solving driven math course for pre-service elementary teachers.
- *Advanced Perspectives on School Mathematics*. Capstone course for pre-service high school mathematics teachers.
- *Dynamics of the Physical World* (2, 3). Experiment-driven physics and earth science course for pre-service elementary teachers.
- *Science Scholars Learning Community: Science, Pseudoscience and SF* (1, 2). Writing intensive critical thinking course.
- *Geometry of Structures*. *Science of World Building* (2, 3). Upper level integrated content courses for MST majors.
- *May the Force be With You*. Honors course studying the science of Star Wars Saga and movie-making.
- *Computer Applications I*. Introduction to MS Office for a general audience.

St. John Fisher College, Rochester, NY – Graduate Courses

- *Foundations of MST* (1). *Assessment in MST. Integrating Instructional Technology into a Learning Environment* (2, 3).
- *Special Topics in Science: World Building* (2), *Climate Change* (2), *Science through Science Fiction Films* (2).
- *Modeling Change in Mathematics and Science* (2, 3). Math modeling course for high school math teachers.

St. John Fisher College, Rochester, NY – Undergraduate Research (SSCH, MATH)

- 2010-2011. Dan McCarthy. Exploring properties of networks related to diffusion of teaching innovations.
- 2010-2011. Forrest Smith. Mathematical and experimental exploration of the Mpemba Effect.
- 2008-2009. David Slocum. Numerical investigation of soliton solutions to three- and five-level lasers.
- 2006-2007. Kevin Latourette. Developing differential equations to model the dynamics of a paper helicopter in flight.
- Fall 2005. Matt MacWilliams. Developing differential equations to model the dynamics of a paper helicopter in flight.
- Fall 2005. Paul Ilukor. Follow up on Mark Bellavia's work on using cellular automata to model traffic flow.
- Spring 2004. Mark Bellavia. Cellular automata models of traffic flow.

St. John Fisher College, Rochester, NY – GMST Master's Research Projects/Thesis

- 2003-4. Mike Roesser. The Educational Implications of Student Work-Area Arrangement in the Classroom.
- 2002-3. Kathy Bussey. Effects of Dysgraphia on Teachers' Perceptions of a Student's Capabilities.
- 2002-3. Kim Edmonds. How Journal Writing Can Uncover Misconceptions in Mathematics.
- 2002-3. Adam Eck. Discrepant Events: How Can They Effect Students' Intrinsic Motivation to Succeed in General Physics?

St. John Fisher College, Rochester, NY – Independent Study/Tutorial

- GMST 596 Fall 2010 with Jessica Vito. Study of mathematical knowledge for teaching.
- MSTI 314 Mathematical Models of Change and Accumulation. Fall 2006. Student: James Reile.
- GMST 596 Spring 2004 with Anna Gorbold. Study of educational/instructional technology specialists in local school districts.

- GMST 596 Fall 2001 with Kelly D'Arcangelis. Advanced version of MSTE 310 with projects.

University of Arizona and Pima Community College, Tucson, AZ

- *Multivariable Calculus* (3). *Introduction to Ordinary Differential Equations* (3).
- *Introduction to College Algebra* (3). *Elements of Calculus for Business Students*. *Intermediate College Algebra*.
- *Basic Mathematics*, for the Bridges for Education Program.

(1) indicates a course that was either team taught or was part of a learning community cluster
(2) indicates a new course that I developed. See below for additional information.
(3) indicates a course taught multiple times

Honors

- Received grant from RACCEMS ($15,000) to run the MST Institute in summer 2010.
- Promoted to Second Degree Black Belt (Nidan) in Isshinryu Karate by Sensei William Harp (Rochester, NY) in June 2010.
- Received faculty development grant for Summer 2010 – Spring 20111 ($2,850) for study of student problem solving paths in a complex, interactive, problem solving environment (with Barney Ricca)
- Nominated for advising award in School of Arts and Sciences, Spring 2010.
- Received faculty development grant for Summer 2003 – Spring 2004 ($2700) for development of interactive tools to enhance the teaching of MST 130 (with Allen Emerson).
- Received a "Shining Star" award from a student in MSTA 130 (Spring 2003).
- Nominated for Teaching Award (2001-2002) at St. John Fisher College.
- Project NExT Fellow – MAA sponsored project on New Experiences in Teaching (1999-2000).
- Tennessee Scholar (1990-1994). Barry Goldwater Scholar (Fall 1992-Spring 1994). National Merit Finalist (1990).

Activities and Professional Development

Professional Organization Memberships

- American Association for the Advancement of Science (AAAS) Member (2004-present).
- National Council of Teachers of Mathematics (NCTM) Member (2000-present).
- Mathematical Association of America (MAA) Member (1999-present).
- American Mathematical Society (AMS) Member (1994-2009).

Committee Work

- Strategic Review Committee. Fall 2008 – present. Review faculty position requests for recommendations to administration.
- Graduate Program Council (Fall 2005 – present). Elected chair for 2009-2010 and 2010-2011 academic year. Faculty at-large representative (the only elected position).
- Two ad hoc committees to review teaching evaluations at SJFC. The first committee (fall 2008) looked at the benefits of switching to an electronic version of the evaluations. The second committee (summer and fall 2009) looked at the format, the questions and the purpose of the evaluations, eventually making a recommendation to the faculty.
- Worked with a small team of faculty under direction of Dean of Arts and Sciences to develop a hybrid-format, adult degree completion program, Organizational Leadership. The program was approved by the state of NY in summer 2008 and will begin accepting students in January 2008.
- Department Search Committees (Spring 2008, Dr. Barney Ricca; Spring 2006, Dr. Ryan Gantner; Spring 2004, Dr. Diane Barrett; Spring 2004, Dr. Mark McKinzie; Spring 2001, Dr. Erica Johnson)
- Served on AHCAP (Ad Hoc Committee for Assessment Planning), Summer 2004-Spring 2005. This group worked on college-wide learning goals and developing a common template for assessing these goals across programs. Organized and help run the Fall 2004 Faculty Development Workshop (September 1, 2004) as part of the roll-out effort.
- Library Committee (Fall 2004 – Spring 2007). Chair: fall 2004 – spring 2005. Initiated semi-annual "Faculty Scholarship Celebration".
- Core revision committee representing the mathematics, natural sciences, and technical sciences., Fall 2003 – Fall 2004. Attended AAC&U conference in Newport, R.I. at Salve Regina (May 2004) on General Education. This group

developed goals and student learning objectives for the general education program at Fisher, as well as re-designing the core curriculum to meet these goals.

- PETAL (Program for the Enhancement of Teaching And Learning) committee, Fall 2001 – Spring 2003. Sponsored several faculty development workshops, created "Teaching and Learning Circle" initiative.
- Educational Technology Steering Committee (ETSC, formerly ITSC) Fall 2000 – present.
- Organizing committee for the first annual Mathematics Graduate Day. University of Arizona. Spring 1999.

Program, Course, and Curriculum Development

- Developed the Science Scholars Program. I grew the scholarship program from a freshman-year learning community to a four-year program including a three-semester, budget-supported research component.
- Developed new curriculum for MSTI, Mathematics Science and Technology Integration (former MSTE Program) to re-focus the major as an interdisciplinary liberal arts program in mathematics and science, using technology.
- Revision of GMST program and MATH major to meet NCATE standards.
- Developed Dynamics of the Physical World (MST 310, renumbered MST 215), Mathematical Modeling and Quantitative Analysis (MST 130), and several other science and math content courses for GMST Program.

Workshop Participation

- Faculty workshop for developing online/hybrid instruction courses. St. John Fisher College. May 20-23, 2008.
- MAA PREP Workshop (online): Exploring multivariable calculus using Maple. June 25-29, 2007.
- Short course: Environmental Modeling. 9:00 – 5:00, August 8-9, 2006. At Mathfest in Knoxville, TN.
- Faculty development workshops at Fisher. Writing: August 2006. Student Learning: January 2006. Learning goals: May 2004.
- Fisher NCATE Workshop. June 2005 (at Rochester Yacht Club).
- Teaching and Learning Circle: Writing Across the Curriculum. St. John Fisher College. Summer and Fall 2002.
- Eisenhower Grant Workshops. SJFC. Fall 2001 – Fall 2002. Structuring Student Centered Learning Environments in MST.

Conferences Attended

- American Education Research Association (AERA) Annual Conference, Denver, CO, April 30 – May 4, 2010.
- AMS/MAA Joint Meetings. Washington, DC: January 2009, San Diego: January 2008. New Orleans: January 2007. San Antonio, TX: January 12-15, 2006. Atlanta, GA: January 5-8, 2005. Phoenix, AZ: January 7-11, 2004. San Diego: January 5-9, 2002. New Orleans: January 10-13, 2001. Washington, DC: January 18-23, 2000. San Antonio, TX: January 13-16, 1999.
- Mathfest (MAA National Meeting). Madison, WI: August 2008. Knoxville, TN: August 2006. Providence, RI: August 1999.
- PMET mini-conference. Oswego, NY. June 4-5, 2006.
- Seaway Section Meeting of the MAA. SUNY Geenseo: Fall 2005. RIT: November 2003. SUNY Fredonia: October 2000.
- NCATE Conference in Washington, D.C. March 2005.
- AAC&U Conference on General Education in Newport, RI. May 2004.
- ICTCM (International Conference on Technology in Collegiate Mathematics Education) in Orlando, FL. November 2002.
- Learning Communities Curriculum Planning Retreat, Northeast/Mid-Atlantic LC, Chestertown, Maryland. April 11-12, 2002.
- Syllabus Conference in Santa Clara, CA. Summer 2001.
- Project NExT (Part I, II, III) for 1999-2000 Fellows. III: MAA Mathfest, Los Angeles. August 2000. II: AMS/MAA Joint Meetings in Washington, DC. January 18-22, 2000. I: MAA Mathfest in Providence, RI. August 1999.
- Mathematics Graduate Day. Department of Mathematics and Program in Applied Mathematics. University of Arizona. May 1999.
- Seventh Annual Teaching and Technology Conference for Arizona Educators in Tucson, AZ. January 23, 1999.
- ITEC: Education Technology Exposition in Tucson, AZ. Spring 1998.
- International Conference on Modern Mathematical Models of Time and their Applications to Physics and Cosmology in Tucson, AZ. April 11-14, 1996.
- Southeast Regional Meeting of the American Physical Society at Oak Ridge National Laboratory. May 1993.

Professional and Community Service

- Project Next consultant for the Red 2008 class
- Judge for the undergraduate poster session at the Joint Mathematics Meetings (2007, 2008, 2009)
- Reviewer for the "Media Highlights" section of the *College Mathematics Journal* published by the MAA. In this capacity, I review *Science*, *Journal of Computers in Mathematics and Science Teaching*, *PRIMUS*, and *Journal of College Science Teaching*. Fall 2007 – present, with an average of one review per issue, five issues per year.
- Neighborhood volunteer for The Leukemia and Lymphoma Society, Fall 2003-present.
- Youth program co-director, Twelve Corners Presbyterian Church, 2002-2003 Academic Year.

Personal Interests

- Teach martial arts: Isshinryu Karate. Harp Karate, Rochester, NY. Earned Black Belt from Sensei William Harp August 19, 2008.
- Avid/fanatic/obsessive *Star Wars* collector and scholar.
- Enjoy hiking, rock climbing, tennis and biking. Have hiked sections of the Appalachian Trail in Connecticut (June 2007), Massachusetts (June 2008) and Tennessee (June 2009) with my father.
- Experience with Macromedia Flash MX, Interactive Physics, Programming in FORTRAN, PASCAL, BASIC, C.
- Expertise in Microsoft EXCEL, *ODE Architect*, MAPLE.