NSF Mathematical Sciences Infrastructure at JSU

Progress in Integrating Technology in Teaching and Learning of Mathematics at Historical Black Colleges and Universities (HBCUs)

Core University/College Participants: Alcorn State University, Jackson State University, Mississippi Valley State University, Rust College, Southern University in New Orleans, and Tougaloo College

Project Activities

- **Summer Mathematica Training Workshops for Faculty**
- **Academic Year Undergraduate Research with Faculty in the Program**
- **Mid-Year Workshops and Program Evaluation**
- **NSF Programs: TUES-Type 1 Project, HBCU-UP, INFRASTRUCTURE PROGRAMS, OFFICE OF MULTIDISPLINARY AC**

Interactive Classroom Environment

OBJECTIVES

•Train 30 HBCU mathematics faculty each year for two years to gain expertise in integrating the mathematica software in the teaching and learning of calculus and upper division mathematics courses

•Participating faculty will engage one mathematics major per year in a year-long research experience and place the student in a summer research experience at other institutions,

•Train participating faculty to develop mathematica course guidelines and manuals integrating programming with mathematica and course delivery

•Engage 30 mathematics majors in undergraduate research in mathematics with mathematica from the participating universities and colleges

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Summer 2012 Inaugural Meeting Mathematics Department Chairs and Wolfram Research, Inc.

Workshops Organizational Meeting at Jackson State University, Friday, July 27, 2012, Just Hall of Science. Department Chairs from Alcorn State University, Jackson State University, Mississippi Valley State University, Rust College, Southern University in New Orleans, Tougaloo College, Project PI and Co-PIs, and Wolfram Research, Inc. Representative, Sean McDonald.

Undergraduate Students, Analyze, Visualize and Document their Research Results

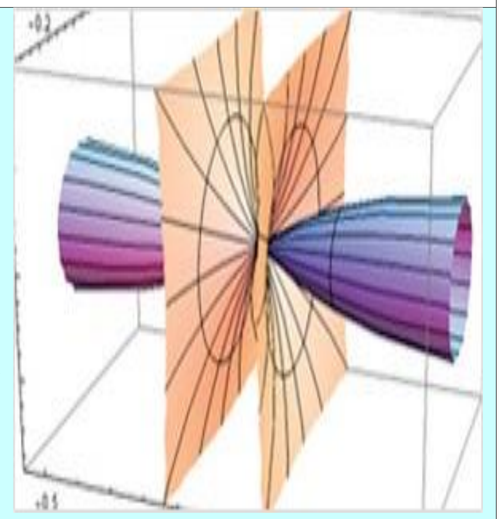
Undergraduate Research with Mathematica

•Generate graphical solutions to research problems and mathematica programming files

•Develop documents, reports, presentations, and articles with Computable Document Format (CDF) player for dynamic interaction and visualization

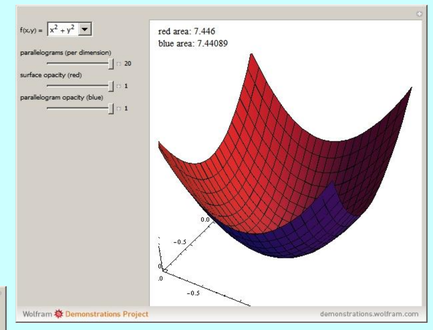
•Learn how to drive content and generate results live

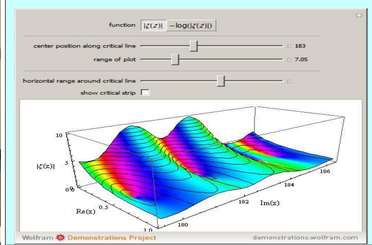
•Develop interactive models for simulating aneurysm evolution, growth and rupture



Courseware and Projects

•Calculus
•Single Variable
•Multivariable
•Ordinary Differential Equations
•Linear Algebra
•Partial Differential Equations
• Dynamical Systems
• Mathematical Modeling and Simulations
• Course Guide with Mathematica
• Mathematica Course Modules
• Undergraduate Research Projects
•Abstract Algebra
•Number Theory and Cryptography
•Bio-informatics and Genome Science
•Integrate CDF player modules in the lesson plans





Workshop Instructors
• Roosevelt Gentry, Ph.D., Professor of Mathematics
•Celestin Wafo Soh, Ph.D., Associate Professor of Mathematics
• Zhenbu Zhang, Ph.D., Associate Professor of Mathematics