

Introduction

In 2000, Alabama A&M University (AAMU), a historically black university, began a space physics concentration in the physics department. Through the support of NSF CISM and NASA MUCERPI funds, and the collaborative effort of many space physicists, AAMU has developed a B.S. and M.S. course curriculum in space physics, graduated 2 students with Bachelor's concentration in space physics, and hired two tenure track space physics faculty. Currently there are 6 undergraduates and 2 graduate students enrolled in the space physics concentration. AAMU is developing into a vibrant center of space physics research as well as a conduit to introduce space physics to underrepresented minority students.

Institutional Goals

- Add a Ph.D. concentration in space science.
Submit paperwork to AL Commission of Higher Education.
- Recruit 3 new graduate students
Visit HBCUs and minority conferences to publicize space science option
Distribute space science flyers to minority and majority institutions
- Develop a computer lab specifically for space science research
Seek funding and location for new lab
- Become a more integral part of the larger solar and space physics community.
Faculty and students attend and give seminars at local institutions and space science conferences
Start a space science journal club
Participate in CISM seminars through access grid
- Add new courses to attract and inform students of space science
Non-science major and upper lever astronomy
Space science lab utilizing the MSFC solar vector magnetograph
Computational physics

Timeline of	past accomplishments and future goals
2000	Won first NASA OSS MUCERPI grant, developed B.S. Space Science Curriculum
2001	Became CISM member institution
2003	With CISM support, won second NASA MUCERPI grant, developed M.S. Space Science Curriculum
May 2005	Hosted first CISM Space Weather Weekend for undergraduates from minority serving institutions
Fall 2005/ Spring 2006	Hired two new tenure track space physics faculty.
2006	Will graduate first two physics Master's students with space science concentration.
Fall 2006	Design and implement Space Science computer lab. Recruit undergraduate and graduate students to participate in the space physics research program.
2007	Add Ph.D. concentration in Space Physics.
2008-2010	Continue development of space science group. Graduate first Ph.D. students.

AAMU-CISM Activities

- AAMU research and education incorporates and compliments CISM models.
- Research interactions between AAMU faculty and students with multiple CISM institutions.
- AAMU students attend CISM Summer School and form relationships with researchers at CISM institutions.
- AAMU students and faculty attend CISM seminars and research discussions via Access Grid.
- AAMU hosts Space Weather Weekend.
- CISM collegial support for AAMU graduate space science program.

Space Weather Weekend



Space Weather Weekend, a CISM diversity initiative, was started in 2005. A total of 20 undergraduates recruited from minority institutions and minority conferences have attended the intensive 2 day course including lectures, a hands-on computer lab, a trip to the space and rocket center, and an open discussion on applying to graduate school. The event was designed by FIT and hosted by AAMU. Scientists from both institutions, as well as BU, MSFC, and CISM staff have participated.

Alabama A&M Community

Faculty

We recognize that the success of the space physics group at AAMU depends strongly on the faculty and their ability to attract and support students. The group currently consists of three space physics tenure track faculty and several other faculty, research faculty, and adjunct faculty that provide oversight, guidance, and support.

Dr. Amy Winebarger, Assistant Professor, joined the space physics group in January 2006. The focus of her work is to constrain the solar coronal heating mechanism through data analysis and modeling. She also studies CME initiation and solar flares.

Dr. T.X. Zhang, Assistant Professor, joined the physics department in Fall 2005. His interests include theoretical model development, data analyses, numerical modeling, and fluid/particle simulations of solar-terrestrial and astrophysical plasma processes.

Dr. Arjun Tan, Professor, studies planetary and space physics, specifically satellite fragmentation and orbital debris.

Dr. Marius Schamschula, Assistant Professor, has his Ph.D. in optics but contributes his expertise of computational physics and numerical analysis to the space physics group.

Dr. Ravi Lal, Professor and University Eminent Scholar, is an integral part in development of the space physics group at AAMU. He is the PI for the NSF/CISM project at AAMU.

Other Important Community Members:

- Dr. Slava Liatsky**, AAMU Research Faculty
- Dr. Vinod Bhatnagar**, AAMU Research Faculty
- Dr. David Hathaway**, MSFC, Adjunct Faculty and president of the advisory board
- Dr. Hakeem Oluseyi**, UAH, Adjunct Faculty

Students

Undergraduate

Two students, Ms. Fana Mulu (left) and Samaiyah Farid, have completed the B.S. concentration in space physics and have continued to the graduate program. There are currently 6 students enrolled in the space science course at AAMU and one undergraduate involved in research.



Graduate

Ms. Fana Mulu and Ms. Samaiyah Farid will be the first physics graduate students to complete the new space physics concentration. They both received their Bachelor's degrees from AAMU in 2004 and entered the graduate program. Ms. Mulu expects to complete her Master's degree in July 2006. Her research concerns developing a method to predict geomagnetic activity using correlations between solar wind parameters and geomagnetic indices. After graduation from AAMU, she plans to enter a Ph.D. program in Atmospheric Science at another university. Ms. Farid expects to complete her Master's degree in December 2006. Her thesis research will be to analyze and model the solar plumes that she observed in Ghana during the March 29, 2006 solar eclipse. Her future plans are to continue studying solar physics in pursuit of a Ph.D. Ms. Mulu and Ms. Farid presented space physics talks at the 2006 National Society of Black Physicists Meeting in San Jose, California. Both young scientists attended the CISM summer school.

Undergraduate Courses:

- Introduction to Lower Atmosphere
- Introduction to Aeronomy
- Survey of the Solar System
- Introduction to Orbital Mechanics
- Elements of the Magnetosphere

Graduate Courses:

- Introduction to Solar-Terrestrial Physics
- Physics of the Sun and Solar Wind
- Physics of the Magnetosphere
- Physics of the Ionosphere and Thermosphere
- Radio Wave Propagation in the Ionosphere
- Planetary Atmospheres and Ionospheres