

**Minority University and College Education and Research  
Partnership Initiative (MUCERPI) in Space Science  
(NRA 03-OSS-03)**

**Year 1 Grant Report  
(January 1, 2004 to December 31, 2004)**

Grant Number and Title: NNG04GD62G  
“New Directions in Astronomy and Astrobiology”

Principal Investigator: Dr. Donald K. Walter

Institution: South Carolina State University

Address: 300 College St.  
Orangeburg, SC 29115

**SUMMARY**

South Carolina State University (SCSU) has completed a highly successful first year under its NASA MUCERPI-2003 award. A wide range of space science activities have been supported in the areas of research, education and outreach. New collaborations have been developed with astronomers at NASA’s Goddard Space Flight Center (GSFC) and the Lawrence Livermore National Laboratory. Under this grant, SCSU has partnered with all three NASA Explorer schools in the state of South Carolina and held a number of workshops for in-service teachers. SCSU has collaborated with faculty members at other minority institutions including Medgar Evers College, Talladega College, Bennett College, Elizabeth City State University and Norfolk State University. SCSU has significantly increased its involvement in the field of astrobiology through partnerships with astronomers and chemists at the Goddard Center for Astrobiology at GSFC as well as with partner school Bennett College. Other partnerships with institutions in Arizona, Kentucky and North Carolina have been highly productive as has a collaboration with a junior college located near the campus of SCSU. High school and undergraduate students have completed research projects in radio astronomy, cosmology and modeling of close binary star systems. One SCSU astronomer was awarded a NASA Faculty Fellowship for ten weeks of research at the GSFC and was a CoI on a successful Cycle-1 Spitzer Space Telescope archival proposal. Numerous referred papers and conference presentations were made by faculty members and students and several proposals were submitted during Year 1.

**DETAILS**

**A. Academic Program Development**

- Space Science Faculty Positions:** Dr. Jennifer Cash  
 Department/specialty area: Biological & Physical Sciences/Astrophysics  
 New or redirected?: Redirected  
 Tenure-track or Temporary?: Tenure-track  
 Percent of funding paid by this grant: 25%  
 Hiring status: Release time to conduct faculty & student research  
 Will university support positions after end of grant?: Yes  
 If yes, tenure-track or temporary?: Tenure-track
- Space Science Faculty Positions:** Dr. Nasrollah Hamidi  
 Department/specialty area: Biological & Physical Sciences/Astrophysics  
 New or redirected?: Redirected  
 Tenure-track or Temporary?: Temporary  
 Percent of funding paid by this grant: 4%  
 Hiring status: Summer salary to develop chemistry collaboration with NASA  
 Will university support positions after end of grant?: Yes  
 If yes, tenure-track or temporary?: Temporary
- Space Science Faculty Positions:** Dr. James E. Payne  
 Department/specialty area: Biological & Physical Sciences/Physics & Radio  
 Astronomy  
 New or redirected?: Redirected  
 Tenure-track or Temporary?: Tenure-track (already has tenure)  
 Percent of funding paid by this grant: 15%  
 Hiring status: Release time to develop collaborations & mentor student research  
 Will university support positions after end of grant?: Yes  
 If yes, tenure-track or temporary?: Tenure-track
- Space Science Faculty Positions:** Dr. Linda L. Payne  
 Department/specialty area: Teacher Resource Center/Physics & K-12  
 Education  
 New or redirected?: Redirected  
 Tenure-track or Temporary?: Tenure-track (already has tenure)  
 Percent of funding paid by this grant: 9%  
 Hiring status: Develops and assists in conducting K-12 teacher programs  
 Will university support positions after end of grant?: Yes  
 If yes, tenure-track or temporary?: Tenure-track
- Space Science Faculty Positions:** Dr. Judith Salley  
 Department/specialty area: Biological & Physical Sciences/Biology  
 New or redirected?: Redirected  
 Tenure-track or Temporary?: Tenure-track (already has tenure)  
 Percent of funding paid by this grant: 0%  
 Hiring status: Coordinates & supports development of astrobiology projects  
 Will university support positions after end of grant?: Yes  
 If yes, tenure-track or temporary?: Tenure-track

**Space Science Faculty Positions:** Dr. Daniel M. Smith  
Department/specialty area: Biological & Physical Sciences/Cosmology  
New or redirected?: Redirected  
Tenure-track or Temporary?: Tenure-track (already has tenure)  
Percent of funding paid by this grant: 25%  
Hiring status: Mentors summer student research projects in astrophysics  
Will university support positions after end of grant?: Yes  
If yes, tenure-track or temporary?: Tenure-track

**Space Science Faculty Positions:** Dr. Donald K. Walter  
Department/specialty area: Biological & Physical Sciences/Astrophysics  
New or redirected?: Redirected  
Tenure-track or Temporary?: Tenure-track (already has tenure)  
Percent of funding paid by this grant: 28%  
Hiring status: Manages grant and conducts research in astrophysics  
Will university support positions after end of grant?: Yes  
If yes, tenure-track or temporary?: Tenure-track

**Space Science Degrees:**

Subject area: (e.g., Astronomy) Astronomy  
New or Revised?: New  
Major, minor, or concentration? (If concentration, within what major?): Minor  
Leading to what degree? (e.g., B.S.) B.S.  
Development status or term first offered: Being prepared for submission to SCSU  
Educational Policies Committee  
Outcomes (e.g., numbers of students pursuing or completing the degree): None to  
date  
Will university continue degree program after end of grant?: Yes

**Space Science Courses:** Not Proposed

**In-Service Teacher Training**

April 24, 2004 Twenty-four (24) in-service teachers from middle and high schools in South Carolina participated in a Professional Development Session at SCSU that featured a videoconference with the NASA Mercury MESSENGER Mission E/PO Lead Ms. Stephanie Stockman who broadcast from the Goddard Space Flight Center. Additional presentations were giving by PI D. Walter and CoI L. Payne on the Venus transit in June 2004 as well as state and national science and math standards as they related to the MESSENGER mission. Additionally, the teachers received NASA resource materials from the Broker/Facilitator SERCH and the NASA Educator Resource Center (ERC)

located on the campus of SCSU.

July 19-23, 2004 Ten (**10**) in-service teachers from middle and high schools in South Carolina participated in a for-credit course “Space Science for Teachers” offered at SCSU by CoIs L. Payne and J. Cash. The course provided an overview of the field of space science and included science content information, hands-on, inquiry-based activities and discussion of the state and national standards in the field. NASA resources on the web were accessed and curriculum materials were distributed from the Broker/Facilitator SERCH and the NASA Educator Resource Center (ERC) located on the campus of SCSU.

October 15-16, 2004 CoIs J. Payne and L. Payne and Collaborator M. Castelaz will hold a 1.5 day training session for ten (**10**) in-service teachers at the Pisgah Astronomical Research Institute near Rosman, NC. The teachers will be trained to operate the 4.6-m radio telescope while on-site, but will use the facility remotely, over the Internet, for future classroom activities.

November 4, 2004 Workshop for ten (**10**) in-service teachers from middle and high schools in South Carolina conducted by CoI J. Payne and collaborator C. Osborne. Entitled “Radio Astronomy from Your Classroom”, in addition to an overview of the field of radio astronomy, the teachers will receive hands-on training in running a radio telescope remotely over the Internet. The workshop will take place at the 29<sup>th</sup> annual meeting of the South Carolina Science Council in Charleston, SC, the largest gathering of science educators in South Carolina with approximately 1,000 people in attendance.

November 5, 2004 Workshop for twenty-five (**25**) in-service teachers from middle and high schools in South Carolina conducted by CoI L. Payne and Master Teacher S. Watts. Entitled “My stars! What’s on Mars”, the workshop includes hands-on, standards-based activities related to space science. Curriculum materials will be distributed from the NASA Educator Resource Center (ERC) located on the campus of SCSU. The workshop will take place at the 29<sup>th</sup> annual meeting of the South Carolina Science Council in Charleston, SC, the largest gathering of science educators in South Carolina with approximately 1,000 people in attendance.

### **Precollege Outreach**

June 14- July 23, 2004 CoI J. Payne mentored a (**1**) high school student Kayla Harward in her study of radio astronomy and a research project entitled “Observing the Sun at Radio Frequencies”. Kayla learned how to operate the SCSU 4.5-meter radio telescope as well as the 4.6-meter radio telescope at the Pisgah Astronomical Research Institute in Rosman, North Carolina. The student will be presenting several talks and posters during the 2004-5 academic year including at the South Carolina Academy of Science.

June 17, 2004 PI D. Walter spoke to twelve (12) college-bound students at the Goddard Space Flight Center on the undergraduate and graduate college experience plus careers in science with emphasis on space science.

August 26, 2004 CoI J. Cash conducted an evening observing session for eight (8) students (grades 1-10) and seven (7) parents of the Orangeburg Christian Home School Association.

November 3-5, 2004 PI D. Walter, CoIs J. Cash, J. Payne, L. Payne, J. Salley and Collaborator D. Smith will present an exhibit "Space Science at SCSU" at the 29<sup>th</sup> annual meeting of the South Carolina Science Council; Charleston, SC.

### **Public Outreach**

October 8-9, 2004 PI D. Walter will conduct an image processing workshop for fifteen (15) people at Norfolk State University. This is a collaborative effort with colleagues L. Johnson and S. Austin from Medgar Evers College and C. Salgado at Norfolk State University. All three institutions are MUCERPI 2003 award recipients. The workshop will include an overview of CCDs and astronomical image processing as well as a discussion of various software applications in image processing and available equipment (e.g. CCD cameras). The audience includes amateur astronomers as well as students and faculty members.

October 27, 2004 PI D. Walter, CoIs J. Payne and J. Cash and Collaborator D. Smith will hold a lunar eclipse observing session for an estimated 200 students and members of the general public on the campus of SCSU.

### **B. Faculty/Student Professional Enhancement and Development Through Partnerships and Exchange Programs**

For each partner institution, briefly describe the following:

<b>Institution Name:</b>	<b>NASA's Goddard Spaceflight Center (GSFC)</b>
Name(s) of individual(s) involved:	Dr. Donald Walter, SCSU Dr. Michael Mumma, GSFC Dr. Michael DiSanti, GSFC
Nature and Goal of Partnership:	Faculty-level collaborative research
Activities:	Walter spent 10 weeks at GSFC in the summer 2004, learning techniques of IR studies of comets
Outcomes:	Walter is a member of the research team at GSFC and is working on spectra of the comet WM1. Future publications and presentations are anticipated
Plans for continuing partnerships after end of grant:	Continued through collaborative proposal writing and related activities.

**Institution Name:** NASA's Goddard Spaceflight Center (GSFC)  
Name(s) of individual(s) involved: Dr. Nasrollah Hamidi, SCSU  
Dr. Jason Dworkin, GSFC  
Nature and Goal of Partnership: Partnership under development  
Initially student research collaboration; later a  
faculty-level research collaboration.  
Activities: One meeting has taken place, background literature  
studies and a second meeting is planned to find  
common research goals and deliverables  
Outcomes: Intended to produce student internships and faculty  
publications.  
Plans for continuing partnerships after end of grant: Continued through collaborative  
proposal writing and related activities.

**Institution Name:** NASA Explorers School Program  
Name(s) of individual(s) involved: Dr. Linda Payne, SCSU  
Dr. James Payne, SCSU  
Dr. Donald Walter, SCSU  
Ms. Sandra Watts, Carver-Edisto Middle School  
Dr. Cynthia Downs, Newberry County Schools  
Ms. Ashley Holmes, Sandhills Middle School  
Nature and Goal of Partnership: SCSU support of NASA Explorer schools  
Activities: Planned: teacher training, student projects,  
observing sessions  
Outcomes: Anticipated: Student presentations, greater teacher  
use of NASA curriculum materials  
Plans for continuing partnerships after end of grant: Continued through collaborative  
proposal writing and related activities.

**Institution Name:** Lawrence Livermore National Lab (LLNL)  
Name(s) of individual(s) involved: Dr. Jennifer Cash, SCSU  
Dr. David Dearborn, LLNL  
Nature and Goal of Partnership: Faculty-level research  
Activities: Cash spent 2 weeks at LLNL in the summer of 2004  
learning the code used by Dearborn to create 3-D  
stellar models.  
Outcomes: Cash is working on a post-processing program to  
read the output from the LLNL model and use as  
input to compute astrophysically meaningful  
quantities (e.g. optical depth)  
Plans for continuing partnerships after end of grant: Continued through collaborative  
proposal writing and related activities.

**Institution Name:** **Lawrence Livermore National Lab (LLNL)**  
Name(s) of individual(s) involved: Dr. Donald Walter, SCSU  
Dr. Kennedy Reed, LLNL  
Nature and Goal of Partnership: Faculty exchanges, student research  
Activities: Email exchanges & brief face-to-face at the OSS  
Chicago 2004 meeting  
Outcomes: Plans to have LLNL researchers visit and speak at  
SCSU; at least one student from SCSU to apply for  
summer internship at LLNL  
Plans for continuing partnerships after end of grant: Continued through collaborative  
proposal writing and related activities.

**Institution Name:** **Pisgah Astronomical Research Institute (PARI)**  
Name(s) of individual(s) involved: Dr. James Payne, SCSU  
Dr. Michael Castelaz, PARI  
Mr. Charles Osborne, PARI  
Nature and Goal of Partnership: Student research, teacher training, public outreach  
all related to radio astronomy  
Activities: High school student research project, summer 2004,  
teacher training at PARI, October 2004, future  
undergraduate student research projects  
Outcomes: Student presentations, use of PARI radio telescope  
by teachers, enhancement of teaching of space  
science through teacher involvement.  
Plans for continuing partnerships after end of grant: Continued through collaborative  
proposal writing and related activities.

**Institution Name:** **Orangeburg-Calhoun Technical College (OCTC)**  
Name(s) of individual(s) involved: Dr. James Payne, SCSU  
Dr. Walter Tobin, OCTC  
Mr. David Metts, OCTC  
Mr. Jim Link, OCTC  
Mr. Gary Foley, OCTC  
Nature and Goal of Partnership: Student projects, curriculum enhancement  
Activities: Installation of 4.5-m radio telescope at OCTC by  
SCSU. Scope is accessible via the Internet. OCTC  
faculty will use it in classes on robotics and  
computer science for hands-on experience and  
student projects.  
Outcomes: Future faculty at junior college to propose to  
NASA, student projects & curriculum enhancement  
Plans for continuing partnerships after end of grant: Continued through collaborative  
proposal writing and related activities.

**Institution Name:** **Bennett College (BC)**  
Name(s) of individual(s) involved: Dr. Donald Walter, SCSU  
Dr. Benita Bell, BC  
Nature and Goal of Partnership: Faculty exchange, student research  
Activities: Walter spoke at NASA Space Science Week at BC  
Bell will speak at SCSU about her summer research  
in astrochemistry at NASA Ames and Goddard  
Outcomes: Faculty & student exchange; greater awareness of  
NASA opportunities; future summer research  
opportunities  
Plans for continuing partnerships after end of grant: Continued through collaborative  
proposal writing and related activities.

**Institution Name:** **Planetary Science Institute (PSI)**  
Name(s) of individual(s) involved: Dr. Donald Walter, SCSU  
Dr. Donald Davis, PSI  
Nature and Goal of Partnership: Faculty research  
Activities: PSI has provided, on-site support for upkeep and  
enhancement of the 1.3-m telescope at Kitt  
Peak National Observatory  
Outcomes: Software and CCD camera support by a postdoc at  
PSI has facilitated the science testing of the 1.3-m.  
SCSU and PSI have guaranteed time on the 1.3-m  
as members of the Robotically Controlled  
Telescope (RCT) Consortium.  
Plans for continuing partnerships after end of grant: Continued through collaborative  
proposal writing and related activities.

**Institution Name:** **Talladega College (TC)**  
Name(s) of individual(s) involved: Dr. Donald Walter, SCSU  
Dr. Eric Richards, TC  
Nature and Goal of Partnership: Faculty Research  
Activities: Collaborative research & proposal writing  
Outcomes: Richards & Walter successfully proposed for an  
archival proposal to the Spitzer mission; their  
proposal was accepted and funded  
Plans for continuing partnerships after end of grant: Continued through collaborative  
proposal writing and related activities.

**Institution Name:** **South Carolina Governors School for Science &  
Mathematics (GSSM)**  
Name(s) of individual(s) involved: Dr. James Payne, SCSU

Dr. Linda Payne, SCSU  
 Dr. Donald Walter, SCSU  
 Dr. Carolyn Randolph, GSSM  
 Student Kayla Harward, GSSM

Nature and Goal of Partnership: High school student research projects  
 Activities: Summer 2004, student Kayla Harward conducted research at SCSU under J. Payne's mentorship  
 Outcomes: Student Poster: "Comparison Study of the Sun at Various Frequencies" completed; future student talk at the South Carolina Academy of Science  
 Plans for continuing partnerships after end of grant: This formal partnership will not be continued past Year 1 because of the departure of Dr. Randolph from GSSM.

**Institution Name: Robotically Controlled Telescope Consortium**  
 Name(s) of individual(s) involved: Dr. Donald Walter, SCSU  
 Dr. Charles McGrudger, Western Kentucky U.  
 Dr. Richard Gelderman, Western Kentucky U.  
 Dr. Michael Carini, Western Kentucky U.  
 Dr. Edward Guinan, Villanova U.  
 Dr. John Mattox, Fayetteville State U.  
 Dr. Steve Howell, National Optical Astronomy Obs.  
 Dr. Donald Davis, PSI  
 Dr. Mark Everett, PSI

Nature and Goal of Partnership: Refurbishment & commissioning of the 1.3m telescope at KPNO  
 Activities: Science testing of the telescope & components  
 Outcomes: The contractor will turn the telescope over to the Consortium before the end of 2004.  
 Plans for continuing partnerships after end of grant: Continued through collaborative proposal writing and related activities, including a submission to NSF under the PREST program in January 2005.

**ADDITIONAL INFORMATION**

**Significant Activity – Leveraged Funds -- Awarded**

N. Hamidi was awarded \$994 by the South Carolina NASA Space Grant Consortium to travel to the Goddard Space Flight Center to develop a collaboration with astrochemist J. Dworkin. Proposal title: "Synthesis of Pre-biotic Material under Simulated Early Earth, Planets and Asteroids"

**Significant Activity – Leveraged Funds – Proposed**

L. Payne is the PI on a proposal submitted to NASA (NRA NN-H-04-Z-YO-006-N) entitled "The South Carolina Earth System Science Program". CoIs include G. Senn

from the University of South Carolina at Aiken and B. Jones from the Savannah River National Laboratory. A budget of \$711,971 over a three year period has been proposed. While this proposal is made to the Earth Science Enterprise, its core activities are patterned after the successful “Space Science for Teachers Course” funded under SCSU’s Minority Initiative Award in 2000. The experience gained by L. Payne under the previous and ongoing (see In-Service Teacher Training) space science experience is the major motivator behind this earth science submission. Status: Pending

#### **Significant Activity – Leveraged Funds – Proposed**

D. Smith submitted a proposal to NSF CCLI (NSF 04-565) entitled “Visualization and Analysis of the Large Scale Structure of the Universe”. Submitted June 17, 2004; requesting a 2-year total funding of \$75,000. Co-PI, M. SubbaRao of the Adler Planetarium and the University of Chicago. Status: Pending

#### **Significant Activity – Leveraged Funds – Proposed**

J. Payne collaborated on the following proposal submitted to NSF (NSF 04-511) “Development of the Galactic Gigahertz Environment Monitoring Station”; PI. M. Castelaz of the Pisgah Astronomical Research Institute; other collaborators included B. Dennison, Virginia Tech and W. Christiansen, University of North Carolina at Chapel Hill. Proposed Budget: \$706, 332 over 3 years; Status: Not approved

#### **Significant Activity – NASA Faculty Fellowship Award**

D. Walter was awarded a NASA Faculty Fellowship for 10 weeks of research at the Goddard Space Flight Center. Walter collaborated with Drs. Michael Mumma and Michael DiSanti of the Goddard Center for Astrobiology in a study of the IR spectra of the comet WM1.

#### **Significant Activity – Referred Publications**

The following referred publications include PI D. Walter as lead author or coauthor. This OSS grant provided partial support for the research reported in the publications below.

Walter, D.K. et. al, 2004, “Narrow-band Imagery with the Robotically Controlled Telescope”; *Astronomische Nachrichten*, **Vol. 325**, Issue No 6-8, in press

Everett, M. et. al. 2004, “Automated Image Reduction at the RCT”, *Astronomische Nachrichten*, **Vol. 325**, Issue No 6-8, in press

Gelderman, R. et. al, 2004, “The Robotically Controlled Telescope (RCT) at KPNO”, *Astronomische Nachrichten*, **Vol. 325**, Issue No 6-8, in press

McGruder, III, C.H. et. Al. 2004, “Searching for Extrasolar Planets with the 1.3m Robotically Controlled Telescope on Kitt Peak”, *Astronomische Nachrichten*, **Vol. 325**, Issue No 6-8, in press

McGruder, III, C.H. et. Al. 2004, "The Optical Detection of Gamma Ray Bursts with the 1.3m Robotically Controlled Telescope on Kitt Peak", *Astronomische Nachrichten*, **Vol. 325**, Issue No 6-8, in press

### **Significant Activity – Awarding of Spitzer Space Telescope Proposal**

D. Walter, collaborated with E. Richards from Talladega College, an HBCU in Alabama, to submit a Cycle-1, archival proposal to NASA's Spitzer Space Telescope mission. Their proposal was accepted and awarded in full: "The Far-Infrared Properties of A Large Radio Selected Sample in the SIRTFLS," PI. E. Richards, CoI D. Walter

### **Significant Activities – Presentations at Professional Conferences**

Faculty members at SCSU presented at a number of professional conferences. This OSS grant provided support for the work reported below and/or the travel to present at these conferences. SCSU faculty members are indicated in **bold**.

"Radio Astronomy in the Undergraduate Curriculum", **Payne, J.E.**, Brown, J.L. & **Walter, D.K.**; Faculty poster presentation at the 203<sup>rd</sup> American Astronomical Society Meeting; Atlanta, GA., January 5, 2004

"New Directions in Astronomy and Astrobiology", **Walter, D.** Faculty oral presentation to NASA Headquarters as a project briefing describing the new OSS award to SCSU; Washington, D.C; February 17, 2004

" Outcomes from the MUCERPI 2000 Award to South Carolina State University", **Walter, D., Payne, J., Payne, L. & Smith, D.**; Faculty poster presentation to NASA Headquarters as a project summary for the OSS 2000 award to SCSU; Washington, D.C.; February 16, 2004

"MIAC, the First 'Virtual Collaboration' of Minority Institutions focused on Astrobiology", Gary, T., Bell, B., Bowman, A., Butler, J., Laval, B., Rivera, M., Lowe, L., Jejelowo, F., Perry, B. & **Walter, D.**; Faculty poster presentation at the 3<sup>rd</sup> Astrobiology Science Conference; NASA Ames, Mountain View, CA; , March 28, 2004

"Reaching for the Stars"; **Walter, D., Payne, L.** and Watts, S. Faculty oral presentation at the National Science Teachers Association Meeting; Atlanta, GA.; April 4, 2004

"Correlation Function Analysis of Large Scale Structure"; **Smith, D.**; Faculty poster presentation at the Meeting of Astronomers in South Carolina; Charleston, SC; April 17, 2004.

"Modeling of the ballistic and magnetic portions of the accretion streams in polars"; **Cash, J.**; Faculty oral presentation at the Meeting of Astronomers in South Carolina; Charleston, SC; April 17, 2004.

"Modeling of the ballistic and magnetic portions of the accretion streams in polars"; **Cash, J.** & Alexandrov, A; Faculty & student poster presentation at the 204<sup>th</sup> American Astronomical Society meeting; Denver, CO; May 30-June 3, 2004.

"Automated modeling and analysis of accretion stream models for magnetic CVs" Alexandrov, A & **Cash, J.**; Faculty & student poster presentation at the 204<sup>th</sup> American Astronomical Society meeting; Denver, CO; May 30-June 3, 2004.

"Engaging minority students in NASA-related missions"; Harrington, J., Leary, J.C., Austin, S.A., Hayden, L., Johnson, L.P., Schulte, H.; & **Walters, D.**; Faculty poster presentation at the 204<sup>th</sup> American Astronomical Society meeting; Denver, CO; May 30-June 3, 2004.

"Analysis of Large Scale Structure for the Non-Expert"; **Smith, D.**; Faculty poster presentation at the NASA OSS Chicago 2004; Chicago, IL; June 28-29, 2004

"Astrophysics at South Carolina State University"; **Walter, D., Abdel-Kader, W, Barnes, J., Cash, J., Payne, J., Payne, L., and Smith, D.**; Faculty poster presentation at the NASA OSS Chicago 2004; Chicago, IL; June 28-29, 2004

"Energy-Deposition Events Measured by the CRRES PHA Experiment"; McNulty, P.J., Kinnison, J., Maurer, R., Roth, D.R., **Abdel-Kader, W.**, and Reed, R.; Faculty oral presentation at the 2004 IEEE NSREC; Atlanta, GA; July 18-23, 2004.

"Analysis of Galaxy Groups Using SDSS Data"; **Smith, D.**; Faculty oral presentation at the 129<sup>th</sup> National Meeting of the American Association of Physics Teachers; Sacramento, CA; July 31-August 4, 2004.

"Identifying an Important Source of Talented Students from Underrepresented Communities Through Effective Partnerships with Minority Serving Institutions"; Hayden, L., **Walter, D.**, and Porter, W.; Faculty oral presentation at the National Meeting of the American Geophysical Union; San Francisco, CA.; December 13-17, 2004.

### **Significant Activities – Conference Attendance**

SCSU faculty members participated in professional development activities supported by this OSS grant in addition to those reported under "Significant Activities – Presentations at Professional Conferences".

D. Walter (astronomer), W. Simpson (biologist) and N. Hamidi (chemist) attended the NASA Astrobiology Institute conference at the NASA Ames Research Center; Mountain View, CA; March 28 – April 1, 2004

L. Payne attended the "NASA Mars Institute" held during the National Science Teacher Association meeting; Atlanta, GA; April 1-4, 2004

L. Payne attended the NASA Regional Educator Resource Center (ERC) meeting in Charlotte, NC; April 20-22, 2004.

D. Smith attended the APS/APPT meeting “Physics in the Public Interest” held at the American Center for Physics, College Park, MD; June 4-6, 2004

N. Hamidi attended the “Astrobiology in Secondary Classrooms” workshop at the Goddard Space Flight Center; sponsored by the Goddard Center for Astrobiology and the Minority Institute Astrobiology Collaborative (MIAC); Greenbelt, MD; June 28-July 2, 2004

L. Payne attended the NASA Web Watchers Workshop at the Goddard Space Flight Center; Greenbelt, MD; August 1-6, 2004

D. Walter attended the 36<sup>th</sup> annual meeting of the Division for Planetary Sciences of the American Astronomical Society; Louisville, KY; November 8-12, 2004

### **Significant Activities – Undergraduate Student Research Projects**

J. Cash and D. Smith mentored a total of four (4) undergraduates during the summer of 2004. The students and their projects included:

“3-D visualization of Cataclysmic Variables”,  
Deidrick Capers, SCSU Computer Science Major

“Determining the Peculiar Velocity of Galaxies Found in SDSS”  
Wanda Moses, SCSU Computer Science/Mathematics Major  
Constance Ray, SCSU Industrial Engineering Technology Major  
Jennifer Sanders, SCSU Mathematics Education Major