Recommendations:

A Summary of the Discussions from the 2011 SPIN-UP Workshop for Physics Faculty at Historically Black Colleges and Universities "Human Capital Development in Physics" May 13-15, 2011, Hampton, VA

For Physics Departments

1. ***Work on building community in the department***
    a. Build an active Society of Physics Students (particularly important for physicists in multidisciplinary departments since it will provide a showcase for physics whether or not students are majors.)
    b. Find a space where physics students can meet to work on problems, particularly in upper division courses. The room or part of a room will need a board on which the students can do problems collaboratively. An old couch or a used microwave is a plus but it is not necessary.
    c. Keep an open door policy. If possible, brown bag lunches or pizza lunches attended by both faculty members and students keep lines of communication open and help the department respond to student needs.
    d. Focus on advising and mentoring for courses but also for careers and graduate school.
    e. Be sure that new freshmen are welcomed into the department as soon as they arrive on campus.
    f. Work on active recruiting by building connections both to high school teachers and to the admissions staff at the university. Be sure to consider effective use of faculty and student time in recruiting (e.g. visiting individual classes vs. holding a physics day on campus).

2. ***Publicize achievements in physics*****:** Send the Dean or the President copies of published faculty papers and reports on conferences attended by the faculty. Junior faculty should be encouraged to send material directly since their reputation is important in promotion, tenure and contract renewal discussions. Don't forget to send reports on teaching innovations along with photos of happy students. Remember that presidents and deans have to brag about the achievements of their faculty and students to donors, alumni and the press so provide them with some help that will promote physics.

3. Build an active colloquium series**:** Build a speaker series by sharing with neighboring institutions, recruiting from local industry, or taking advantage of large physics departments willing to send faculty speakers to recruit. Try to make these colloquia open to the local community at least twice a year. If possible, arrange for a large public lecture on a glitzy topic like black holes, exoplanets or string theory. Ask the President to introduce the speaker. Guarantee an audience by offering extra credit to students for coming, and involve the local press.

4. ***Service courses***: Be sure that service courses serve the needs of students enrolled in them by working with departments who require physics.

5. ***Departmental advisory committee*****:** Form a departmental advisory committee that can bring successful alumni and local industrial leaders into the department to interact with faculty members and students.

For University Administrators

1. Recognize that physics has long represented a pinnacle of modern intellectual achievement and an active program is a hallmark of an academically rigorous college or university. Historically the existence of a physics program indicates that a university is serious about academics and can prepare students for competitive graduate programs and challenging careers.

2. Introduce representatives of local industry to the faculty and students in your physics department. Physics majors are both intelligent and hard-working so they make excellent employees and are often impressive examples of student excellence. This is indicated by the fact that unemployment rates among physics graduates are much lower than in many other fields.

3. Pay a visit to the physics department and see the exciting work in teaching and research that is happening there.

For the HBCU Physics Community

1. Form a Council of HBCU Physics Department Chairs to keep one another informed about departmental problems and potential solutions to them and to act as a central point for coalitions of departments for projects in research and teaching.

2. Prepare a major proposal for a research project addressing a grand challenge as identified by the federal government, for example providing renewable energy, that can be most effectively addressed by a collaboration among physics departments at HBCUs.

3. Form a collaboration to institute instructional reform, perhaps developing the use of undergraduate learning assistants, that will both improve student learning of physics and also involve physics undergraduates more directly in the departmental community.

For Funding Agencies

1. Promote recognition that physics departments in HBCUs have produced and still produce more than half of all the African American B.S. graduates in physics.

2. Make sure that HBCU Physics Departments are aware of major proposal solicitations both in research where they have strength and in human capital development. This could be done through the Council of HBCU Physics Department Chairs because some of the HBCUs lack infrastructure to keep faculty informed of such opportunities.

3. Ask program officers to make an extra effort to ensure that HBCU physicists participate in large collaborative projects when they have appropriate expertise.

For Physics Professional Organizations

1. Support both virtual and physical meetings of the Council of HBCU Physics Department Chairs.

2. Take steps to tie HBCU physicists more closely into the larger physics community. For example, provide stipends for HBCU physics faculty to attend the New Faculty Workshops

or reduce registration fees for HBCU faculty in institutions geographically close to a national meeting.

3. Assist in building bridge programs from undergraduate physics programs to graduate programs in physics. Pay special attention to graduate programs at HBCUs as well as those at TWIs (Traditionally White Institutions)

Report on:
2011 SPIN-UP Regional Workshop for Historically Black Colleges and Universities

Human Capital Development in Physics

May 13-15, 2011, Hampton, VA
Paul Gueye, James Stith and Quinton Williams

Description of the workshop:

This workshop was the last in a series of regional workshops based on the results of the Strategic Programs for Innovation in Undergraduate Physics (SPIN-UP) project conducted by the National Task Force on Undergraduate Physics and published in 2003. The workshops are a joint project of the American Association of Physics Teachers (AAPT), the American Physical Society (APS) and the American Institute of Physics (AIP) and are funded by the National Science Foundation.

This workshop was tailored to the needs of undergraduate physics programs at Historically Black Colleges and Universities (HBCUs). The chairs of all HBCU physics departments that offer an undergraduate physics major were invited to attend and bring one or two faculty colleagues. The local organizing committee was lead by Paul Gueye and Rashinda Davis of the Hampton University Physics Department. The grant funded travel expenses, and the local organizing committee worked with Tiffany Hayes and Celina Cantrell of the Programs Division at AAPT. The committee worked hard to ensure that attendees' travel expenses were covered and that their accommodation and travel needs were met.

Unlike previous workshops, the Hampton workshop was directed by a steering committee that consisted of Paul Gueye (Physics Department at Hampton University and the Jefferson Laboratory), James Stith (Vice President Emeritus of the American Institute of Physics), and Quinton Williams (Interim Provost and Vice President for Academic Affairs and Student Life and Professor of Physics at Jackson State University). Previous SPIN-UP regional workshops have focused on developing departmental physics programs to better serve their students and the institutions in which they reside. In addition to this goal, the Hampton workshop also promoted collaboration among HBCU departments, considered major projects in research and education where such collaboration would be a benefit, and identified resources from the federal agencies that fund research in physics, and tried to make the case for HBCU physics departments approaching agencies as a consortium.

Eighteen of the thirty-four departments invited to the workshop sent representatives. (The representative from Norfolk State University who had planned to attend could not come due to a last-minute medical issue.) The workshop was also attended by representatives of AAPT. APS, AIP, the Society of Physics Students (SPS), the National Society of Black Physicists (NSBP), the National Science Foundation (NSF), the Department of Energy (DOE), the National Institutes of Health (NIH), and the National Aeronautics and Space Administration (NASA). Dr.

Robert Dixon, Dean of the School of Science at Hampton University, Peter Delfyett, President of NSBP and Chanda Prescod-Weinstein, a member of the board of NSBP also contributed to the workshop. A complete list of attendees is attached to this report as Appendix A, and the program of the workshop is included as Appendix B. Although planning session 2 didn't occur as planned due to time constraints, the questions were discussed in planning session 3. At the end of the workshop, a representative from each department presented measures that the department would take to strengthen its physics programs. These plans are included as Appendix C of this report.

In addition to the individual departmental plans, the workshop identified three major projects for the attention of the HBCU physics community that are discussed below along with the major challenges that motivated them.

Major Challenges Identified

1. Low Undergraduate Enrollments in Physics

Many undergraduate programs that provide the bachelor's degree in physics and that are located at an HBCU are endangered. One of the attending departments had recently had its physics program suspended and at least two others were facing mergers with other departments. Most have seen a significant drop in the number of majors in recent years.

Many physics departments teach large service loads and frequently attract substantial amounts of external funding. For these reasons, in favorable economic times, university administrators have overlooked the small numbers of undergraduates in physics. However, in tough economic times like these, administrators are likely to pay more attention to undergraduate enrollments and, unless they have a good sense of the value the department brings to the institution, they often require programs with small enrollments to justify their existence. Many institutions have requirements for minimum enrollments in courses that are on the order of 7-10 students. It is thus difficult for departments that graduate fewer than five majors a year to make upper division physics courses meet these requirements. Even if programs offer upper division courses every other year, a solution which can be inconvenient for students since they must follow a set schedule to complete their degree requirements, it can be difficult to make the university's minimum class size. To compound departmental difficulties, tough economic times often signal reductions in budgets for state and federal agencies that fund research. It is not surprising that almost every attending department has as one of its goals to increase the number of undergraduates completing a physics major.

Physics departments at HBCUs have a strong track record in producing well-prepared physics majors, and several have strong graduate programs supported by established, externally funded research groups. Undergraduate programs appear to be rigorous. However, according to data provided by Patrick Mulvey of the Statistical Research Center at AIP, for the years 2005 – 2009, only six of the 36 HBCU physics departments for which AIP has data graduated an average of 5 majors a year. All departments in HBCUs averaged 2.7 graduates with a B.S. in physics per year. Yet HBCUs continue to produce more than half of all African American B.S. physics graduates annually.

2. Difficulty in Attracting External Funding

Most HBCUs lack the institutional infrastructure found at R1s and even larger second-tier state universities for approaching federal and state agencies that fund research. Those departments with long established research programs are competitive and receive funding that is equal to or greater than physics departments at similar universities.

Departments felt particularly disadvantaged in the search for funds to support educational research projects. They also mentioned a significant lack of support for scholarships that could be used to attract talented African American students to HBCUs since these students are heavily recruited by other physics departments.

3. Lack of recognition of the value of physics and physics research

Administrators at the various HBCUs sometimes fail to recognize the importance of having an active physics program at their institution. The blind spot often extends to other STEM disciplines. Physics also has a problem because there are no jobs for graduates with a bachelor's degree in physics clearly labeled "physicist." This problem is by no means unique to physics departments at HBCUs, but it impacts departments' ability to recruit students into their undergraduate programs. Press coverage of the physics often focuses on large institutions like the national laboratories rather than the work done locally. It is essential that the university community, the public and governmental agencies recognize the importance of physics in promoting the discoveries that build growing economies and widespread prosperity.

A second related problem is the lack of departmental contact with high school teachers who often influence students' choices of college majors. There are very few well-prepared African-American high school physics teachers, a problem which several of the departments are trying to address. Less than 2% of all high school physics teachers nationwide are African American. Additionally, several HBCUs that had a history of producing African American high school physics teachers have lost their programs which further compounds the problem.

4. Lack of Communication

Physics departments in HBCUs share many common problems. However, they have no tradition of, or structure for, sharing ideas to solve them. Traditionally, they have not collaborated in seeking funding to support major initiatives in research or education across several campuses.

Many of the physics departments at HBCUs are not linked or have access to the physics professional societies well enough to be aware of the resources available to them and their students through AAPT, APS, and SPS. For example, most APS divisions have programs to support undergraduate students' attendance at national meetings to present their research, and SPS makes grants to chapters to support local projects.

Although the large departments with graduate programs have a strong tradition of seeking external funding, smaller undergraduate departments often lack experience in preparing proposals for federal and state funding, and faculty may be unaware of the resources available through the different agencies.

5. Lack of Resources Within the Department

Physics departments at HBCUs often have much smaller operating budgets than the norm for all physics departments. Faculty generally have teaching loads roughly equivalent to 12 or more credit hours per semester, and they have a strong tradition of working individually with students. Undergraduate departments do not have teaching assistants so faculty must setup and teach their own labs and conduct their own problem sessions. Also, there is usually very little credit provided for mentoring undergraduate research projects when it comes to promotion and tenure. This situation seriously impedes their ability to maintain active research programs.

Although physics programs can be changed with little money and it is possible to obtain external funding for laboratory equipment and other supplies, reforms place demands on faculty time if only for planning. Therefore, if physics departments are to take action to improve their undergraduate programs, a mechanism must be found and implemented to free faculty time for this work.

Proposals for Action to Meet These Challenges

In the final planning session of the workshop, participants split into three groups. Each group addressed an individual topic: communication, education or research. All groups focused on actions that might be taken by the physics community at HBCUs in collaborations among departments and with the funding agencies and the physics professional societies.

Action 1: Improve Communications

All participants at the workshop agreed that it will be important for HBCU physics departments to work together. Even if they don't collaborate on research or major education projects, there was a consensus that these departments could learn from one another and needed to know the resources available within each department and to exchange information on resources that have become or about to become available. It was also suggested that undergraduate departments consider bridge programs between their departments and HBCUs with PhD programs.

This working group decided to establish a Council of HBCU Physics Department Chairs. The current plan is for this Council to meet once a quarter using web video conference. Paul Gueye of Hampton University will oversee this effort. Texas Southern University will host the website for the Council that will contain information on the virtual meetings and other relevant information. Carlos Handy, chair of the physics department at Texas Southern University will coordinate this effort locally. Beth Cunningham, Executive Officer of AAPT, agreed to use the Webex Video Conferencing System available to her through AAPT to facilitate the quarterly meetings. The Council should soon be in a position to exchange information about individual departments as well as engage in developments on the national level.

In addition, the group will need face-to-face meetings. A consensus indicated that such a meeting would be needed every year or two. The natural venue for such meetings is the annual NSBP meeting. Other ideas include putting departmental profiles on the Council website, working to facilitate the transfer of students from undergraduate departments where a program has been closed to another HBCU, and providing funding for HBCU faculty to attend the annual New Faculty Workshop.

Attendees also cited the importance of interacting more closely with the college/university administrators. They cited the importance of providing administrators with the knowledge and data that would allow them to be better advocates for physics with the federal and state agencies and to better understand the unique nature of the physics field. Increasing efforts in public relations within all institutions was considered a key element in this effort.

Finally, HBCUs and the physics professional societies must find ways to increase the interaction between faculty and students at HBCUs and the larger physics community. This increased activity will enrich the experience of the entire community.

Action 2: Collaborative Research Projects

Quinton Williams, facilitator of the group and interim provost and vice president for academic affairs at Jackson State University, proposed that HBCU physics departments form a coalition to respond to one of the grand challenges identified by the federal mission agencies. He suggested that a study of renewable energy, including research on new ways of providing energy as well as on environmental impacts and other issues of sustainability, would use the research expertise of physicists at HBCUs many of whom work in materials and condensed matter physics. Departments that are less research intensive could contribute expertise in human capital development for the field.

It was pointed out by the DOE representative that any major proposal from a group of HBCUs would have to clearly demonstrate the need for a coalition of departments. Furthermore, the proposal would have to clearly outline how the project would be managed along with a detailed plan for accountability and a way to provide a succession of leadership. To benefit undergraduate physics programs, it will be important that undergraduate students, as well as graduate students, be involved in the research. It is also important that each department in the collaboration receive funding directly to reap the fully intended impact. Also, indirect cost policies at some institutions might lead to additional funds flowing into physics departments.

There is little doubt that obtaining major funding for a coalition of physics researchers at HBCUs would provide needed stimulation to these departments and potentially strengthen their production of undergraduate majors.

Because such a major collaborative proposal will require working out the details of the research and the management structure for it, the consensus of the group was that the next step would be to submit a proposal for a planning grant either to one of the federal agencies, probably the Department of Energy, or to a major foundation. Quinton Williams will continue to spearhead this effort, and Charles Weatherford of Florida A&M University will explore the possibility of contacting one of the major foundations.

Action 3: A Collaborative Project in Undergraduate Education

A key issue in human capital development is strengthening undergraduate education both for physics majors and students who are taking physics because it is required for their majors or to fulfill their general education science requirement. In addition to work in individual departments as outlined by the departmental plans in Appendix C, the discussion focused on the possibility of a collaborative effort among several departments.

One model for such a collaborative effort would be the use of undergraduate learning assistants, which has a number of advantages. First, the project offers opportunities for collaboration among departments on such activities as a training program for the learning assistants or developments of project-based laboratories that could be facilitated by learning assistants. A second major benefit would be the assistance that the learning assistants could provide to faculty thereby freeing them to conduct research or develop new educational materials. There are a number of departments where upper division physics majors successfully run lab sections without direct faculty supervision.

The first step in preparing a major collaborative proposal is to determine the unique needs of HBCU physics departments. Wilbur Walters, chair of the physics department at Jackson State University will take the lead in getting a group together to identify needs and determine exactly what needs to be done.

Summary

The proposed actions offer a genuine opportunity to strengthen undergraduate physics programs at HBCUs. It is clear that these departments need to take immediate action to save the weaker among them who are currently facing abolition, and to provide additional vigor to those that are already strong.

Participants at the SPIN-UP Regional Workshop for Faculty at HBCUs

Steering Committee:

Paul Gueye
Physics Department
Hampton University
Hampton, VA 23668
(757) 727-5542
gueye@jlab.org

James H. Stith
Vice President Emeritus
American Institute of Physics
2013 Clearwood Drive
Mitchellville, MD 20721
(301) 390 5914
jstith@aip.org

Quinton Williams
Interim Provost and Vice President for Academic Affairs and Student Life
and Professor of Physics
Department of Physics, Atmospheric & Geosciences
Jackson State University, Box 17660
1400 John R. Lynch Street
Jackson, MS 39217
(601) 979-2244
quinton.l.williams@jsums.edu

SPIN-UP Advisory Committee, Organization and Agency Representatives:

Beth Cunningham
Executive Officer, American Association of Physics Teachers
One Physics Ellipse
College Park, MD 20740-3845
(301) 209-3310
bcunningham@aapt.org

Peter Delfyett
President of NSBP
CREOL, The College of Optics and Photonics
The University of Central Florida
4000 Central Florida Boulevard
Orlando, Florida 32816-2700
(407) 823-6812
delfyett@creol.ucf.edu

Robert Dixon
Dean, School of Science
Turner Hall 102
Hampton University
Hampton, Virginia 23668
(757) 727-5239
robert.dixon@hamptonu.edu

Jack Hehn
Director, Education Division
American Institute of Physics
One Physics Ellipse
College Park, MD 20740-3845
(301) 209-3010
jhehn@aip.org

Ruth Howes
Project Director, SPIN-UP Regional Workshops
Professor Emerita of Physics, Ball State University
714 Agua Fria Street
Santa FE, NM 87501
(505) 955-0836
rhowes@bsu.edu

Caesar Jackson
Program Director, HBCU Undergraduate Programs
Division of Human Resource Development
National Science Foundation
4201 Wilson Boulevard
Arlington, VA 22230
(703) 292-4669
crjackso@nsf.gov

Mark Koepke
Acting Director of the Research Division for Fusion Energy Sciences
Department of Energy
19901 Germantown Road
Germantown, MD 20874
(301) 903-4095
mark.koepke@science.doe.gov

Peter Muhoro
Minority Bridge Program Manager
American Physical Society
One Physics Ellipse
College Park, MD 20740
(301) 209-3245
muhoro@aps.org

Lawrence Norris
Managing Director of NSBP
1100 North Glebe Road
Suite 1010
Arlington, VA 22201
(703) 536-4207
lnorris@nsbp.org

Chanda Prescod-Weinstein
Board member of NSBP
Observational Cosmology Lab
Goddard Space Flight Center
MS-665
Greenbelt, MD 20771
(240) 461-1891
chandadeepti@gmail.com

Thomas Pinelli
National Aeronautics and Space Administration
Langley Research Center
Hampton, VA 23681-2199
(757) 864-2491
thomas.e.pinelli@nasa.gov

Nathaniel Stinson
Acting Director, National Center on Minority Health and Health Disparities
National Institutes of Health
900 Rockville Pike
Bethesda, MD 20892
(301) 402-1366
stinsonn@mail.nih.gov

Gary White
Director SPS and Sigma Pi Sigma
American Institute of Physics
One Physics Ellipse
College Park, MD 20740
(301) 209-3013
gwhite@aip.org

Departmental Participants

Alabama A&M University

Mostafa Dokhanian
Department of Physics
Alabama A&M University
P.O. Box 1268
4900 Meridian Street
Normal, AL 35762
(256) 372-8131
mostafa.dokhanian@aamu.edu

Vernessa M. Edwards
Department of Physics
Alabama A&M University
P.O. Box 1268
4900 Meridian Street
Normal, AL 35762
(256) 372-8107
vernessa.edwards@aamu.edu

Dillard University

Abdallah Darwish
School of STEM
Dillard University
2601 Gentilly Boulevard
New Orleans, LA 70122
(504) 816-4840
adarwish@dillard.edu or
adarwish@bellsouth.net

Elizabeth City State University

A.V. Adedeji
Department of Chemistry, Geology and Physics
Elizabeth City State University
Campus Box 925
1704 Weeksville Road
Elizbeth City, NC 27909
(252) 335-8538
avadedeji@mail.ecsu.edu

Althea Blulett
Department of Chemistry, Geology and Physics
Elizabeth City State University
Campus Box 925
1704 Weeksville Road
Elizbeth City, NC 27909
(252) 335-3975
ablulett@mail.ecsu.edu

Florida A&M University

Charles Weatherford
Department of Physics
Florida A&M University
Tallahassee, FL 32307
(850) 599-3767
charles.weatherford@famu.edu

Grambling State University

Avaine Strong
Department of Physics
Grambling State University
P.O. Box 4263
Grambling, LA 71245
(318) 274-2687
stronga@gram.edu

Lee Britt
Department of Physics
Grambling State University
P.O. Box 4263
Grambling, LA 71245
Brittli@gram.edu

Hampton University

Donald Whitney
Department of Physics, Olin 102
Hampton University
Hampton, VA 23668
(757) 727-5277
donald.whitney@hamptonu.edu

Howard University

Anand P. Batra
Department of Physics and Astronomy
Howard University
2355 6th Street N.W.
Washington, DC 20059
(202) 806-6254
abatra@howard.edu

Belay Demoz
Department of Physics and Astronomy
Howard University
2355 6th Street N.W.
Washington, DC 20059
(202) 806-6267
bbdemoz@howard.edu

Jackson State University

Wilbur L. Walters,Jr.
Department of Physics, Atmospheric & Geosciences
Jackson State University
Box 17660
1400 John R. Lynch Street
Jackson, MS 39217
(601) 979-7012
wilbur.l.walters@jsums.edu

Lincoln University

Helen Major
Department of Physics
Lincoln University
1570 Baltimore Pike
PO Box 179
Lincoln University, PA 19352
(484) 365-7476
hmajor@lincoln.edu

Morgan State University

Keith Jackson
Department of Physics
Morgan State University
1700 E. Cold Springs Lane
Baltimore, MD 21251
(443) 885-3751
Keith.jackson@morgan.edu

Norfolk State University

Doyle Temple
Director, Center for Materials Research
Department of Physics
Norfolk State University
555 Park Avenue, Room MCAR 5501P
Norfolk, VA 23504
(757) 823-2381
datemple@nsu.edu

North Carolina A&T State University

Abdellah Ahmidouch
Physics Department
North Carolina A&T State University
1601 E. Market Street
Greensboro, NC 27411
(336) 285-2105
abdellah@ncat.edu

Floyd James
Department of Physics
North Carolina A&T State University
101 Marteena Hal
Greensboro, NC 27411
(336) 285-2114
fjames@ncat.edu

Prairie View A&M University

Anil Kumar
Physics Department
Prairie View A&M University
PO Box 519, MS 2230
Prairie View, TX 77446
(936) 261-3130
aakumar@pvamu.edu

South Carolina State University

Wagih Abdel-Kader
Department of Biological and Physical Sciences
South Carolina State University
P.O. Box 7022
Orangeburg, SC 29117
(803) 536-8936
abdelkaderwg@scsu.edu

Shadia S. El-Teleaty
Department of Biological and Physical Sciences
South Carolina State University
P.O. Box 7022
Orangeburg, SC 29117
(803) 536-8510
sel-teleaty@scsu.edu

Spelman College

Michael Burns-Kaurin
Department of Physics
Spelman College
Campus Box 220
350 Spelman Ln, SW
Atlanta, GA 30314
(404)270-5849
mburns-k@spelman.edu

Texas Southern University

Carlos R. Handy
Department of Physics
Texas Southern University
3100 Cleburne Street
Houston, TX 77004
(713) 313-1850
handycr@tsu.edu

Tuskegee University

Zengjun Chen
Department of Physics
Tuskeegee University
Tuskeegee, AL 36088
(334) 727-8299
chenz@mytu.tuskegee.edu

Prakash Sharma
Department of Physics
Tuskeegee University
Tuskeegee, AL 36088
(334) 727-8998
pcsharma@tuskegee.edu

University of the District of Columbia

Hailemichael Seyoum
Department of Chemistry and Physics
University of the District of Columbia
4200 Connecticult Avenue, NW
Washington, DC 20008
(202) 274-5868
hseyoum@udc.edu

Daryao S. Khatri
Department of Chemistry and Physics
University of the District of Columbia
8252 Roseland Drive
Fairfax, VA 22039
(703) 965-8997 cell
dkhatri@udc.edu

Virginia State University

Grace Ndip
Department of Chemistry and Physics
Virginia State University
Petersburg, VA 23806
(804) 524-5064
gndip@vsu.edu

2011 SPIN-UP Regional Workshop for
Historically Black Colleges and Universities (HBCUs)

Human Capital Development in Physics

May 13-15, 2011
Crown Plaza Hotel, Hampton, VA (all sessions will be held in the hotel)

Friday, May 13

1:00 p.m.	Registration begins	
5:30 p.m.	General wecome to the workshop	Paul Gueye
5:40 p.m.	Introductions	
6:45 p.m.	Break	
7:00 p.m.	Dinner:	Welcome to the University: Dean Robert Dixon
8:00 p.m.	Introduction to SPIN-UP and Its Results	Ruth Howes
8:30 p.m.	Goals of This Workshop	Jim Stith

Saturday, May 14

7:30 a.m.	Breakfast	
8:15 a.m.	The Experience of Three Physics Departments:	
	Tuskegee University	Zengjun Chen
	Jackson State University	Wilbur Walters
	Spelman College	Michael Burns-Kaurin
9:45 a.m.	Planning Session I: Building Departments I: Departments determine where they would like to be in 5 or 10 years and identify the major challenges they face.	
10:40 a.m.	Break	
11:00 a.m.	Administrative issues in Academia	Quinton Williams
11:45 p.m.	Planning Session II: Building Departments II: Using collaborations with a) other departments on one's own campus and b) physics departments at other institutions.	
12:30 p.m.	Lunch sponsored by SPS	
1:15 p.m.	SPS and the HBCUs	Gary White, Director of SPS Hampton University SPS Chapter
2:00 p.m.	Interaction Between the Physics Societies and HBCUs:	
	APS	Peter Muhoro
	AAPT	Beth Cunningham
	NSBP	Paul Gueye
3:00 p.m.	Break	
3:20 p.m.	Current Programs at the Funding Agencies:	
	NSF	Caesar Jackson
	DoE	Mark Koepke
	NIH	Nathaniel Stinson
	NASA	Thomas Pinelli
4:20 p.m.	Planning Session III: Building collaborations with professional societies and funding agencies	
5:50 p.m.	Break	
6:00 p.m.	Dinner	

7:00 p.m.	Physics Departments and the National Landscape	Jim Stith

Sunday, May 15

7:30 a.m.	Breakfast
8:15 a.m.	2 minute presentations by each department on concrete steps it plans to take to increase numbers of majors and/or foster collaborations on and off campus; departments will be given poster paper to write this down. We'll collect for report and follow-up.
9:40 a.m	Break
10:00 a.m.	Planning Session IV: Preparation of detailed plans for community wide proposals
11:00 a.m.	Groups report out on the progress of their discussions.
11:40 a.m.	Wrap up and evaluation
12:00 noon	Adjourn

Future Plans for Building Physics Programs at Universities Attending the SPIN-UP Workshop

Alabama A&M University plans to work on the following:
1) Implement more rigorous recruitment that will involve all faculty. They will also take steps to get to know their admissions staff and the departmental alumni.
2) Seek funding to attract more talented students to the undergraduate program in physics.
3) Revise the undergraduate physics curriculum to orient it to prepare students interested in careers in health or medicine and work on a degree oriented that will well prepare students who want to become high school physics teachers.
4) Work on retention and reinvigorate SPS.

Dillard University plans to work on the following:
1) Use different teaching methodology like the on-time-teaching pedagogy.
2) Increase the students'-social-life activities in and -out-the class.
3) Increase students' participation in the systemic-mentoring-program.
4) Promote/Enforce the summer internship, REU summer experience
5) Increase the hands-on-training, and the critical thinking in teaching and learning

Elizabeth City State University plans to work on the following:
1) Go to the dean and tell him what the department is doing.
2) Work on getting to know high school teachers, specifically the calculus teachers who influence talented prospective students.
3) Strengthen research collaborations with Norfolk State.
4) Work on proposals to bring external funding into the department.

Florida A&M University plans to work on the following:
1) Continue contact and exchange of ideas with other physics departments in HBCUs.
2) Implement majors in health physics and engineering physics as well as double majors.
3) Work with Florida International Universityto strengthen our collaboration on preparing students who want to become high school teachers and present a plan to the state .
4) With the delivery of a Spheromac Fusion Reactor in June, build an even stronger program in plasma physics and establish research collaborations with other HBCUs.
5) Support the results of the HBCUs presidents' meeting this fall on enhancing the visibility of STEM at HBCUs and increasing research productivity.

Grambling State University plans to work on the following:
1) Energize SPS with more meetings and presentations of their summer work at those meetings. Encourage students to conduct more tutorials at high schools. Provide them with a dedicated SPS space and seek funding available through SPS.
2) Recruit students into introductory classes as dual majors in physics and something else.
3) Increase external funding to the physics program by 30% and work on building collaborations with other universities.

Hampton University plans to work on the following:
1) Revise the introductory physics lab with the aim of attracting engineering majors to double major or switch to physics.
2) Examine the department using the AAPT Guidelines.
3) Work to improve the physics course for premeds and to attract premeds as physics majors.
4) Revise the department brochure so that it is current.
5) Begin to work with Admissions to increase number of entering majors.

Howard University plans to work on the following:
1) Develop an atmospheric physics minor that has already been approved by the College of Arts and Sciences with links to policy, biology and geology. The faculty already collaborate with NOAA, NASA and other institutions (e.g. NRL). Implementation of the minor should help in the enrollment of additional physics majors.
2) Work on building relationships with high schools (e,g. Benjamin Banneker in DC and Eleanor Roosevelt in MD).
3) Involve faculty in the STEM initiative oncampus, which recommends direct line scholarships be given to high GPS students and be controlled by the Department Chair.
4) Initiate collaborative research projects with other institutions and the national labs in which both undergraduate (and graduate) students participate.

Jackson State University plans to work on the following:
1) Get the message out about our department and about HBCUs – PR! PR! PR!
2) Get to know about APS, AAPT and AIP and the resources they have available to recruit students.
3) Develop sustainable collaborations: get to know different departments at HBCUs; connect student organizations.

Lincoln University plans to work on the following:
1) Submit at least two proposals a year for internal and external funding for projects involving students.
2) Increase advertisement for the department in the student newspaper and on the campus radio; get SPS to write the adds.
3) Step up outreach and recruitment; visit high schools starting with the ones closest to Lincoln.

Morgan State University will base its survival on the following vision:
1) Get the visibility and value proposition of the Physics Department and other science departments way up, particularly in the eyes of administrators, trustee's, state of Maryland, and federal government.
2) Avoid having the worth of the department judged by the number of majors enrolled but by the numbers of majors graduated, but instead emphasize what the Physics Department brings to the university.
3) Instill expectation that tenure track faculty have to bring in enough sponsored program funds such that the indirect cost return is equal to their salaries.
4) Focus on the research that the department does well to grow the undergraduate program into a graduate program.
5) Team with other departments within school of science to develop dual majors.
6) Attract visiting faculty members from nearby labs such as NSA, APL, Space Telescope Institute, Goddard, NASA, etc. to serve as part time faculty.
7) Look into on-line labs and project based labs.

North Carolina A&T State University will work on the following:
1) Create a chapter of Sigma Pi Sigma.
2) Explore changes in the introductory physics sequence as a way to increase the retention of physics majors.
3) Conduct more outreach to high schools.

Prairie View A&M University will work on the following:
1) Realign faculty to better meet students' needs and to meet the challenges of the current situation – budgets and public perceptions. (Peter Drucker's comment on Creative Destruction below is the framework we will be using.)

> "*Society, community, family are all conserving institutions. They try to maintain stability, and to prevent, or at least to slow down, change. But the organization of the post-capitalist society of organizations is a destabilizer. Because its function is to put knowledge to work--on tools, processes, and products; on work; on knowledge itself--it must be organized for constant change. It must be organized for innovation; and innovation, as the Austro-American economist Joseph Schumpeter said, is "creative destruction." It must be organized for systematic abandonment of the established, the customary, the familiar, the comfortable--whether products, services, and processes, human and social relationships, skills, or organizations themselves." - Peter F. Drucker, Post-Capitalist Society*

2) Strengthen the Physical Science Program to insure that it is sustainable to provide adequate science preparation for pre-service teachers.
3) Explore the possibility of establishing dual majors among physics departments at HBCUs, perhaps a 2+2 or a 1+2+1 program.
4) Continue and expand high level research efforts among the faculty at PVAMU and via collaborations with other HBCUs.

South Carolina State University will work on the following:
1) Work on including students and faculty members in a strong departmental community as well as engaging their families as appropriate.
2) Persuade faculty members to engage undergraduate students in their research and to seek external funding to do so.
3) Develop faculty exchanges with other universities.
4) Meet with all the faculty at SCSU and give summary of recommendations from the workshop including how to get funding for physics programs.
5) Create a program (degree) in pre-Med physics which will attract students planning to take the MCAT to get into medical school.
6) Tell faculty how important it is to reach out to high school students (grades 8-12) for example by holding science days, and to conduct outreach to physics teachers by doing workshops during the summer for them.

Texas Southern University plans to work on the following:
1) Continue to grow our new physics program which is currently growing.
2) Increase the flow of external funding into the department including a major research facility.
3) Develop a graduate program on the basis of the undergraduate program.
4) Make Texas Southern a mecca for talented African American students from Texas who are interested in studying physics.

Tuskegee University plans to work on the following:
1) Reenergize SPS so that it draws students from other departments.
2) Expand presentations from students who are doing research and figure out how to get them to national meetings as well as state and regional meetings.
3) Prepare two white papers for the Department of Energy to be transmitted through Mark Koepke.
4) Continue contact with chairs of other physics departments at HBCUs.

Virginia State University plans to work on the following:
1) Work on establishing a Minor in Physics. Once established, grow the number of students in the minor to influence the reactivation of the Physics Program.
2) Take advantage of resources available through APS and SPS organizations. Invite physicists to speak with administrators and students.
3) Use the existing dual/concurrent enrollment program at VSU to work with area high school counselors and science teachers, as a means of increasing interest in physics, and building a strong base for a minor/major in physics program.
4) Start establishing links with other disciplines that might be well-served by a double major in physics.