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Annual National Conference Black Physics Students

February 12-13, 1993

Summary Report

Local Organizing Committee 1993

(NASA-CR-195735) THE SEVENTH
ANNUAL NATIONAL CONFERENCE OF BLACK
PHYSICS STUDENTS Summary Report
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Executive Summary

NCBPS Tradition

The National Conference of Black Physics students began in 1986 when several Black physics graduate students at MIT and Harvard decided to address the "pipeline problem" of African Americans in physics by organizing a conference for Black physics undergraduates. The goals of the conference were to a) develop a network within the Black physics community, b) make Black students in physics, particularly at the graduate level, aware of academic and professional opportunities and c) bring important issues and developments in the field to the attention of these students. (See Appendix A, conference announcement)

We are pleased to announce the Seventh Annual National Conference of Black Physics Students held February 12 and 13, 1993 served the largest population of students so far. The largest conference previous to this one hosted 150 students. We registered and prepared for 240 students with 210 actually attending. We had originally planned and budgeted for 120 students.

According to the professional survey of the conference (see section "Formal Statistical Evaluation" and the appendix), over 90% of the students attending felt the conference was good or excellence. About 44% of the attendees have attended a previous NCBPS conference that gave them a solid basis for comparison. Another interesting fact is that 92% of our attendees were physics majors. (See section entitled "Sociocultural Information") We received so many qualified abstracts for technical talks by students that instead of NCBPS's tradition of 3-4 student presentations, we ran 4 parallel sessions in different rooms with 4-5 presentations in each room. In response to comments from previous conferences, the program contained 3 workshop/discussion sessions. The leaders of these workshops had held a training session 3 weeks before the conference at Michigan State University in East Lansing. We are pleased that we adhered closely to our original budget while hosting a conference for double the number of students originally planned.

Conference Program

Presentations and Activities

The 1993 conference hosted a wide variety of presentations and activities. See Appendix B, NCBPS '93 Program.

Continuing the NCBPS tradition, we offered technical physics presentations, tours of physics research facilities, a career and educational fair, technical presentations by students, dinner speakers and a dance. New this year were the interactive workshops (described in the section entitled "New Features"). We included a "celebrity" speaker-- Col. Fred Gregory, an African-American NASA astronaut. This presentation was featured on the local TV news.

There were two last minute changes to the program. They included: the replacement of Howard Adams and Tim Childs with Sylvia Wilson and Warren Buck, respectively. Howard Adams was ill and canceled a couple of days in advance. He recommended Sylvia Wilson, also of the GEM Program, as a replacement speaker. The substitution worked quite well, especially since our program was lacking in female speakers. Tim Childs missed his flight so Warren Buck, who attended the conference as an observer, generously filled in at the last minute.

We ran a brief survey of the corporate, governmental and educational recruiters who were part of our Career/Educational Fair. Of 15 recruiters, 9 responded to the survey. All who responded said they were pleased with the conference arrangements. See Appendix C for the complete results of the Survey for Recruiters.

New Features

Using NCBPS's past to build a better conference

One of the most immediately obvious improvements in our conference was in the marketing effort. We created a royal blue poster with a photograph of 3 Black physics students that we sent to the NCBPS mailing list of interested schools and also to over 700 colleges and universities in the United States that have physics departments. The quality of the poster and the success of the wide mailing are realized when you consider how many new students we attracted and the large number of schools that were represented. Cynthia McIntyre, one of the founders on NCBPS claimed we "set the standard" for NCBPS recruitment materials.

From the student's perspective, the best improvement was the addition of the interactive discussion workshops. The topics for the workshops were: "Getting Ready for Graduate School," "How to Succeed in Graduate School," and "Issues Facing Black Scientists". Each of the three workshops followed the same format: a speaker spoke for about 20 minutes before the large group and presented facts but also stimulated ideas about a particular topic. The students then broke up into preassigned discussion groups, led by a trained graduate student, for a one hour session. (The discussion groups were assigned by putting an even number of males and females, graduates and undergraduates in each group and no more than one student from each school in each group and, finally, we made sure every freshman female had a graduate female in her group.) The graduate students who led the discussion groups attended a training weekend in January. This training weekend not only helped the discussion leaders but also helped the NCBPS '93 Local Organizing Committee refine the program. In the comprehensive outside evaluation, the workshops were the overwhelming favorite of the students. In fact, the six "most beneficial sessions" according to the students were: "Preparing for Graduate School," the workshops in general, the roundtable discussion (another term for the workshops), "Issues Facing Black Scientists," "How to Succeed in Graduate School," and the speakers in general. Note that five out of the top six responses were the workshops or a specific workshop!

At the suggestion of a speaker who wished to "bring the conference home" to his students, we decided to videotape the proceedings of the entire conference. We put together a 30 minute summary tape (included as Appendix H). The tape is beneficial for sharing the conference with people unable to attend, for seeking funding sources for the future of NCBPS and for encouraging students to keep in touch with the network of people they met at the conference. We gave each speaker a videotape of his/her own speech in its entirety.

Almost every year the conference has tried to have a brief survey. Due to the difficulty in evaluating one's own project accurately and the size of the conference, we decided to use a professional evaluation team. We hired the Center for Survey Research to assess who we are reaching with our effort and the effect the conference seems to have on them. See section, "Formal Statistical Evaluation."

Suggestions for 1994

Strengthening NCBPS for the future

There were 2 important aspects of the conference that need improvement (as well as several trivial aspects).

First, we had 30 registrants who did not attend. We had been in touch with all 240 of the registrants by telephone to confirm their participation shortly before the conference but still only 210 attended. We have a few theories about this. Most of the students who didn't come were from the waiting list and invited late. They were asked to pay their own travel with the probability of reimbursement. Travel was arranged differently this year (we paid \$250 directly to the travel agency instead of reimbursing the students) and they may have been confused and simply not made travel arrangements. We had a snow storm the first day of the conference that may have discouraged those who were driving. Finally, it may be that the students who registered late weren't as enthusiastic as the students who had been registered for months. Of the students who did not attend, 5 had airline tickets (2 were ill), 5 were eligible for travel funds but never made arrangements, 9 were planning to drive, and 11 were expected to pay their own way with the probability of reimbursement.

The other aspect that needs attention is the low attendance at many of the sessions and meetings. We've already discussed this problem with Georgia Institute of Technology (NCBPS '94 hosts). They are actively seeking ideas for ways to alleviate the problem. They are considering a variety of incentive systems.

Smaller issues we discussed with Georgia Tech include: the lack of clarity in our letter regarding the travel arrangements; deciding in advance whether to sell extra conference T-shirts; deciding whether the NCBPS mailing list is for sale, free or even available; having local keynote (and dinner) speakers worked very well; keeping the workshops and the training for the workshop leaders since it was cheap and effective; planning on 300 students; and not registering anyone unless they can offer some travel funds.

Formal Statistical Evaluation

Assessment by the Survey Research Division of the Institute for Public Policy and Social Research

As previously stated, we felt that NCBPS had grown so large it was time to have a formal analysis done to see if we are meeting the needs of the students who attend. We hired the Center for Survey Research of the Institute for Public Policy and Social Research at Michigan State University to do the conference assessment. See Appendix D "An Assessment of the 7th National Conference of Black Physics Students".

Our intent in having the evaluation, was not only to discover the students' attitudes about the conference but also to see who the students were and how they "stayed in the pipeline" by choosing careers in the physical sciences. We asked who gave them encouragement in the sciences, if they knew scientists or engineers outside their educational institution, what level of education their parents had, what magazines they read and so on.

We learned one particularly unexpected but interesting piece of information. We had both pre- and post-conference tests that were matched, by number. On the pre-test we asked the students if they planned to go to graduate school. We asked the same on the post-test. We were hoping to see a big rise in the number of students who intended to go to graduate school from the pre-conference to the post-conference survey verifying that the conference met one of its goal of encouraging minority physics majors to further their education. Instead, what we discovered was that the vast majority (over 95% of those responding) planned to attend graduate school according to the pre-test. This didn't leave much room for improvement! The information made us realize we weren't accomplishing the goal we expected but, perhaps, meeting an equally important one. Instead of increasing the number of students going to graduate school we were helping to retain and encourage those who were already planning on it to stick with it.

Sociocultural Information

Informal survey results and demographic statistics

Earl Nelson, Director of the Michigan Department of Education's Office of Minority Equity in Postsecondary Education was our inspirational keynote speaker. He asked us if we would be willing to distribute a brief survey on behalf of his office. We agreed and he offered to share the results with us. See Appendix F, "Office of Minority Equity Survey Results".

We learned that the most important factors in their career selection and educational success were family encouragement and support and K-12 teacher encouragement. The help the students wished they could have received included role models, more encouragement, programs, financial support and tutorial services. When asked what the most effective thing that could be done to help more students study math and science in middle and high school they replied: more encouragement, show the applications of math/science, make math/science interesting and fun, and have more/better teachers, require more math/science, provide earlier and more exposure to math and science, more role models, and more programs (listed in the order of most frequent to least frequent response. Please note this was an open-ended question.) In order to reach their career goals, they claimed they needed self-determination, financial support, outside motivation and support and support/help from their university.

The NCBPS attendee demographics have improved steadily. In past years, the attendees were about 50% physics and 50% engineering at a conference that was supposed to be for physics majors. This year's conference hosted a group that consisted of an astonishing 92% physics majors! The 240 students registered to attend represented 73 different colleges and universities. The only demographic statistic that did not improve involved gender. Although we don't have numbers available, anecdotal evidence suggests there were approximately 50% males, 50% females at previous conferences. We hosted 37% females in 1993. This is still a very high number compared to the percentage of females employed in the field of physics. The poster we used to publicize the event featured a female physics student. We feel the possible drop in the percentage of females is not a significant one. See Appendix G, Demographics.

Expenditures

Projected budget and actual expenditure comparison

We are fortunate the travel expenditures were so low this year. We managed to stay within budget while allowing 120 students more than we budgeted for to attend. We did this thanks to schools who assisted with their students' costs, students who paid all or part of their own travel, a travel agency who worked very hard at providing the lowest air fares, an air fare war held during the peak time for NCBPS students to book flights and many students driving to the conference. One expense that was very high compared to the original budget was the meals. This is understandable since we used the original estimate on food costs then increased our attendance by 100%. The lodging cost was quite accurate simply because there were no more rooms available in the conference hotel so we were forced to put more students in each hotel room rather than rent more rooms for the additional students. We were pleased with our ability to adhere closely to our original budget while hosting a first-class conference for double the number of students originally planned.

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We are pleased to announce the 7th Annual National Conference of Black Physics Students (NCBPS) to be held at Michigan State University, February 11-13, 1993.

Conference Background

In 1986, several Black physics graduate students at MIT and Harvard decided to address the issue of the continuing paucity of African Americans in physics by organizing a conference for Black undergraduate physics students. The goals of the conference were to (a) develop a network within the Black physics community, (b) make Black students in physics, particularly at the graduate level, aware of academic and professional opportunities and (c) bring important issues and developments in the field to the attention of these students. By providing the opportunity to share experiences and learn from each other, this conference was and is an important step toward encouraging Black students to successfully pursue careers in physics. Previous conference locations have been MIT, Howard, Southern, Hampton and Stanford Universities.

NCBPS at Michigan State University

We have planned an assortment of activities which we hope will aid you in your academic career and beyond. Our goal is to help today's Black students become tomorrow's outstanding Black scientists. First of all, let us tell you about Michigan State University (MSU). The University is located in East Lansing, adjacent to Michigan's capitol city, Lansing. MSU is the site of the National Superconducting Cyclotron Laboratory and a host of forefront research areas in condensed matter, high energy, astrophysics and accelerator physics. Tours of these facilities have been arranged and we are sure that you will find them exciting and productive.

The physics content of the conference will consist of talks and technical presentations by faculty and students. In response to suggestions made at previous meetings, we have planned some lectures by distinguished physicists, on broad areas of research in physics. Also, we have arranged several more specialized talks on exciting current research. Some students attending the conference will also make presentations; we will be accepting abstracts later.

In addition to these scientific presentations, we have planned workshops and round-table discussions to address issues that we believe are especially relevant to African American scientists. These small-group meetings will be led by African American graduate students and young scientists who will answer your questions about admission to graduate school, how to prepare for and succeed in graduate school, and career opportunities. There will also be times when you can meet with industrial and academic recruiters.

Registration

Enclosed is a pre-registration card. Please fill it out and return it promptly. This is especially important because many of you will be flying to Michigan and will need detailed instructions regarding this year's travel procedure, which will be different from previous years. A strict registration deadline of January 15, 1993 will be imposed. No phone registrations please, but you can FAX your forms to (517) 353-4500.

Funding

The first 100 registered students (up to 15 from any single institution) will receive room and board, registration and conference activities free of charge. We anticipate that travel support will be available up to \$250/student. Our past experience indicates that travel grants have been available through some of your home institutions. Due to increasing air fare, we *strongly* advise students to try to obtain such grants of at least \$100 to help offset expenses. After the first 100 students, funding will be provided on a funds available basis.

You can obtain up-to-date information on the conference by calling the NCBPS'93 information hotline at (517) 355-5209, or writing directly to :

NCBPS '93
Department of Physics and Astronomy
Michigan State University
East Lansing, MI 48824-1116

We look forward to seeing you in East Lansing in February 1993!

Sincerely,



Cornelius F. Williams
Chairperson of the Local Organizing Committee

SCIENCE IS OUR FUTURE

Thursday, February 11, 1993

7:00 - 10:00 p.m. Registration and reception--Terrace, Holiday Inn

Friday, February 12, 1993

7:00 - 8:15 a.m. Breakfast--The Atrium and the Alcove, Holiday Inn

8:15 - 8:30 a.m. Walk to MSU Student Union

8:30 - 8:45 a.m. Welcome from MSU President Gordon Guyer--Parlors ABC, MSU Student Union

8:45 - 10:15 a.m. **Overview of Physics**--Parlors A, B, & C, MSU Student Union

Chair: Cornelius Williams, MSU Graduate Student

Ultrafast Optical Phenomena Dr. Anthony Johnson,
AT&T Bell Labs

High Energy Physics Prof. Homer Neal,
University of Michigan

Accelerator Physics Prof. Henry Blosser,
Michigan State University

10:15 - 10:30 a.m. Break--walk to Holiday Inn

10:30 - 12:00 p.m. **Workshop:** Campus Room then break out rooms, Holiday Inn

Topic: "Getting Ready For Graduate School"

Chair: Jeff Wilson, MSU Graduate Student

Opening remarks: Sylvia Wilson, GEM--Notre Dame Univ
Dr. Jules Kovacs, Michigan State University

12:00 - 1:15 p.m. Lunch--The Atrium, Alcove, and the Campus Rooms, Holiday Inn

1:15 - 1:30 p.m. Walk to MSU Student Union

1:30 - 3:00 p.m. **Current Topics in Physics** Parlors A, B, & C, MSU Student Union

Chair: Darrell Spraggins, MSU Graduate Student

Physics Education Prof. Jim Stith,
US Military Academy, Westpoint

Nuclear Physics Prof. Keith Baker,
Hampton University

Condensed Matter Physics Dr. Cynthia McIntyre,
Naval Research Labs

3:00 p.m. Board buses

3:00 - 4:00 p.m. Group I Tour Cyclotron, MSU campus

Group II Tour Physics Astronomy Building, MSU campus

4:00 - 5:00 p.m. Group I Tour Physics Astronomy Building, MSU campus

Group II Tour Cyclotron, MSU campus

5:00 - 6:00 p.m. Career and Education Fair--First floor, Holiday Inn

6:00 p.m. Board buses

6:00 - 7:30 p.m. Dinner--the Michigan Athletic Club

"Taking Charge" Professor Pat Lowrie

Professor of Veterinary Medicine at Michigan State University

SCIENCE IS OUR FUTURE

Saturday, February 13, 1993

- 7:00 - 8:30 a.m. Breakfast--The Atrium and the Alcove, Holiday Inn
- 8:45 - 10:00 a.m. **Student Presentations** (see separate schedule)
- Session A--Campus Room East, Holiday Inn
Chair: N'jema Frazier, MSU Graduate Student
- Session B--Campus Room West, Holiday Inn
Chair: Darrell Spraggins, MSU Graduate Student
- Session C--University D, Holiday Inn
Chair: Terez King, MSU Graduate Student
- Session D--Great Lakes, Holiday Inn
Chair: Mike Watson, MSU Graduate Student
- 10:00-10:15 a.m. Break
- 10:15-11:30 a.m. **Workshop:** Campus Room then break out rooms, Holiday Inn
Topic: "How to Succeed in Graduate School"
Chair: N'jema Frazier, MSU Graduate Student
Opening remarks: Al Green, Stanford University
- 11:30-12:30 p.m. Career and Education Fair--First floor, Holiday Inn
- 12:30- 1:30 p.m. Lunch--The Atrium, Alcove and the Campus Rooms, Holiday Inn
- 1:30 - 1:45 p.m. Walk to MSU Student Union
- 1:45 - 2:45 p.m. **Careers in Science:** Parlors A, B, & C, MSU Student Union
Chair: MSU Alumnus (tentative)
Col. Fred Gregory, Astronaut NASA
Dr. Tim Chiles, TLC Precision Wafer, Inc.
- 2:45 - 3:15 p.m. Surprise Break
- 3:15 - 4:45 p.m. **Workshop** Parlors A, B, & C, then break out rooms, MSU Student Union
Topic: "Issues Facing Black Scientists"
Chair: Mike Watson, MSU Graduate Student
Opening remarks: Professor Jim Gates, Howard University
- 4:45 - 5:00 p.m. Walk to Holiday Inn
- 6:30-8:30 p.m. Dinner--Campus Room, Atrium, and Alcove; Holiday Inn
Keynote Speaker:
Earl Nelson, Michigan Department of Education
Closing remarks: Cornelius Williams, MSU Chair,
Local Organizing Committee
- 9:00 p.m. - 2:00 a.m. Dance party--Campus Room, Holiday Inn

Sunday, February 14, 1993

- 7:00 - 11:00 a.m. Breakfast (Atrium and Alcove, Holiday Inn) and Departure
- 9:00-11:00 a.m. Business meeting--Great Lakes, Holiday Inn
Review 1993 and begin planning NCBPS 1994
Local Organizing committees for 1993 and 1994 please attend

Survey for Recruiters

1. How many years have you participated in NCBPS?

First year: 4
two years: 1
three years: 3
four years: 0
five years: 1

2. Have you been pleased 9 or displeased _____ with the conference arrangements?

Kindly comment on:

- recruitment space/accommodations
- geographic location
- advertisement of conference

1. This year the recruiting sessions were somewhat short. The time on Saturday was fruitful. Friday night the session was very limited due to time shortage. Michigan is a good place to recruit. The atmosphere is geared toward education. The advertisement was average.
2. all were great
3. Excellent. Location permitted us to leave tables and materials so students could pick them up throughout the conference. Much preferred to what was available at 2 previous conferences. Attractive, professional announcement.
4. (blank)
5. Space/accom--fine this year. But it's such a good conference you may need a bigger space next year. Geog locat--good. Advertise--I would only suggest to mail out the agenda when it's decided, if possible.
6. Staff has been quite helpful. Location was convenient for us.
7. Space/accom--excellent for our purposes. Geog location--very good since we got to choose earlier. Advert--adequate for our purposes
8. space/accom--very good, located in high traffic area, geograph--good, advert--good
9. But there needs to be more time set aside to talk to students--no hotel space for first night

Next year's NCBPS will be held at Georgia Tech. Any suggestions?

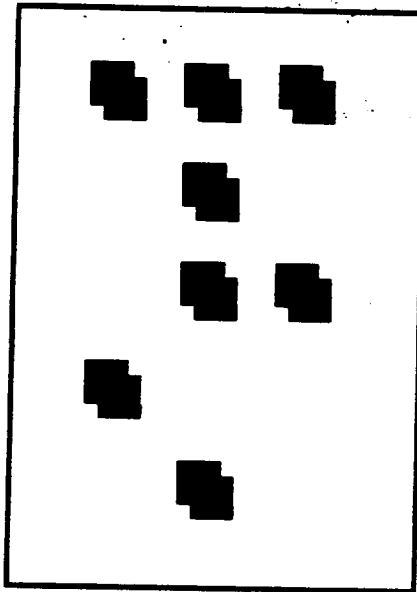
1. Perhaps we could have a larger amount of time for student-recruiter interaction. Perhaps we could have a session for the recruiters to speak to the students in an open forum.
2. Thanks a million!

3. (blank)
4. The recruitment space was adequate, though some of the tables were out of the way. The conference should be advertised much earlier.
5. The Friday evening (5-6) and Saturday morning schedule for the recruiters is very convenient. I recommend you keep this. If an update on agenda and # of students is available, even just a few days before, it would be helpful to receive this.
6. Encourage more student papers. These are a good way to evaluate students for future employment, etc.
7. We will try to single out efforts for greater numbers of recruiters to be present at the GT conference.
8. Had a discussion with Georgia Tech Dean about the timing of the program
9. GOOD STUDENTS !

Total replies: 9 out of 15

C · S · R

Center for Survey Research



Social Science Research Bureau
Michigan State University

Appendix D

**An Assessment of the
7th National Conference of
Black Physics Students**

Report Prepared by

Todd M. Jordan
Project Manager

Larry A. Hembroff
Senior Survey Methodologist

Conducted for

Department of Physics and Astronomy
Michigan State University
East Lansing, Michigan

by the

SURVEY RESEARCH DIVISION

of the

**Institute for Public Policy and Social Research
301 Olds Hall
Michigan State University
East Lansing, Michigan 48824**

A portion of the data presented in this report was collected under contract by the Survey Research Division of the Institute for Public Policy and Social Research at Michigan State University. While SRD accepts responsibility for the quality of the data, the interpretation and conclusions presented are solely those of the author(s).

ABOUT THE SURVEY

In December of 1992, the Department of Physics and Astronomy contacted the Survey Research Division (SRD) of the Institute for Public Policy and Social Research to conduct a study regarding the 7th National Conference of Black Physics Students to be held at Michigan State University. The study was intended to address three objectives: 1) to determine the impact of the conference on interest in attending graduate school, 2) to explore the relative importance of factors stimulating an interest in science as a career, and 3) to collect feedback on the conference itself.

METHODOLOGY

In consultation with the conference planning group, SRD designed two short questionnaires, one to be distributed before the conference and one to be administered after the conference. The Pre-Conference Questionnaire consisted of 16 questions. The key questions were concerned with how interested the student was in attending graduate school, and, if so, whether or not he/she was actually planning to attend, and, if not, why not. To examine factors that might be related to this career choice, the questionnaire asked respondents to indicate how important each of several aspects were in their choice of career and how much these influenced their interest in science. The Post-Conference Questionnaire repeated the questions on interest in attending graduate school to facilitate the before-after measurement needed to assess conference impact. It also contained questions regarding a student rating of the conference itself.

CAVEATS

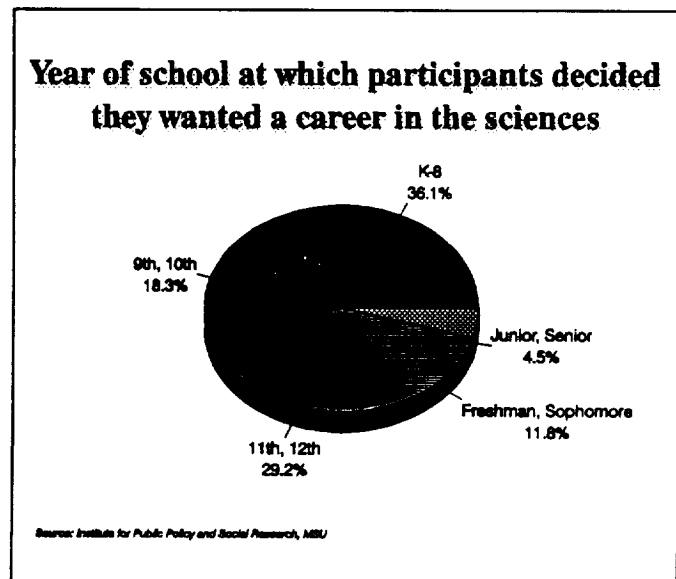
Many of the items included in the questionnaires were designed to be used as background descriptors in the comparative analysis of the pre-conference and post-conference questionnaires. In analyzing the results of the identical questions used in both questionnaires, we found nearly all of the students were interested in attending graduate school. This was true even before the conference started. Because of the high level of interest in attending graduate school in both questionnaires, there is a minimal opportunity for change in these two variables. In other words, because this group of respondents is such a homogeneous and select group, little analysis can be done as to the *differences* between these students. The demographic variables included are not useless, however. A great deal can be learned about the profile of students attending the conference by analyzing these variables alone.

SUMMARY OF FINDINGS

The remainder of this report is a summary of the finding of this study. All percentages are based on completed and returned questionnaires from the 241 students that attended the 7th National Conference of Black Physics Students on February 12 and 13, 1993 in East Lansing, Michigan.

- *Most of the conference attendees were undergraduate students, but nearly all of them plan on attending graduate school. Of the students attending the conference, roughly two-thirds (67.6%) were undergraduate students. Of those, almost all of them (97%), were either somewhat (11.0%) or very (86.0%) interested in attending graduate school. Slightly less than that (95.4%) actually plan on attending graduate school. The item concerning interest in attending graduate school was included on both the pre-conference and post-conference questionnaires. By comparing these items, we concluded that the conference did little to change interest among participants to attend graduate school. Although the variance between the identical pre- and post-conference items is minimal, the conference had a positive impact on the intensity of interest in attending graduate school. Of the students who changed their mind about how interested they were in attending graduate school, 5 of 7 (or 71.4%) increased their interest in attending graduate school.*
- Respondents ranged from 15 to 36 years of age, with just over half (53.3%) of the respondents within the 19 to 22 year old age bracket.
- *Most Conference participants discovered their interest in science before attending college. Respondents were asked in which grade or year of school they first decided that they wanted a career in the sciences. As Figure 1 indicates, over a third (35.9%) reported an interest in a career in the sciences before the ninth grade. Just under a third (29.1%) recalled the 11th or 12th grade as the age this was decided. Less than one in five (16.8%) made this decision in college.*

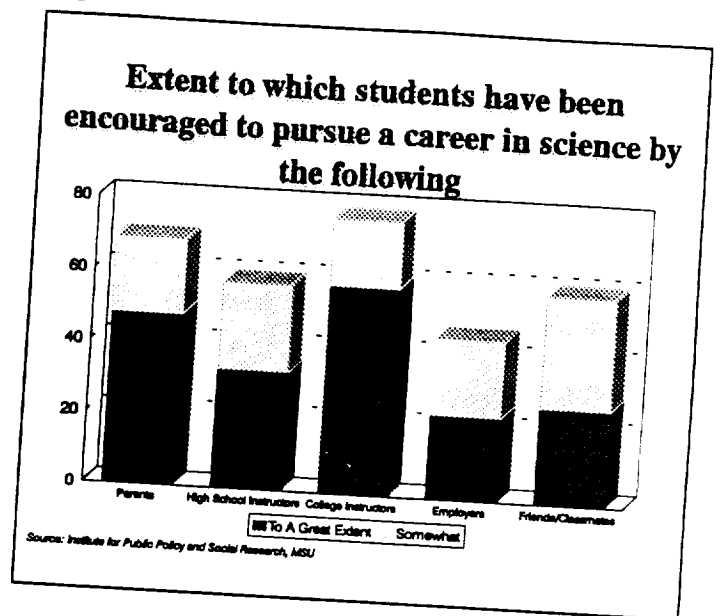
Figure 1.



- *Undergraduate attenders largely associate themselves with other potential graduate students.* Undergraduates were asked two questions related to social relationships and graduate school. The first asked how often they interact with graduate students. Half of those interviewed reported an "occasional" interaction, while only 11.2% said they interact "very frequently" with graduate students. When asked how many of their friends in college are planning on attending graduate school, 90% said either "all or most" or "several". Only 2.2% stated that none of their friends are planning to attend graduate school.

- *Respondents cite college professors and parents as those people most encouraging of them to become scientists.* All respondents were asked to rate how much each of various people had encouraged them to pursue a career in the sciences. These people include parents, high school and college instructors, employers, and friends or classmates. These influences have had varying degrees of influences among students who attended the conference. As shown in Figure 2, overall, over half (57.9%) regarded their college instructors as having influenced to a great extent their decision to pursue a career in the sciences. Nearly half of those interviewed (47.7%) reported that their parents had influenced their career decision to a great extent. Employers seemed to have the least

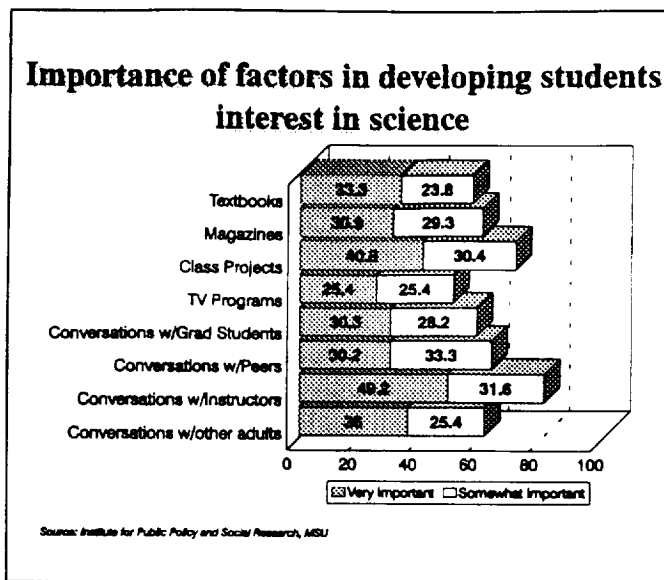
Figure 2



influence of the people mentioned, as nearly one third (29.5%) of the respondents said that their employers provided no encouragement to pursue a career in the sciences.

- Attendees listed interaction with instructors and hands-on class applications as important in pursuing a career in science. Respondents were asked how important or unimportant certain factors were in developing their interest in science. Participants were asked to evaluate the importance of textbooks, magazines or other books, class projects or field trips, and television programs or movies. In addition, SRD was interested in seeing how important conversations with graduate students, peers, instructors and other adults were in developing their interest in science. Figure 3 shows the importance of each of these factors relative to each other. Respondents rated conversations with instructors and class projects highest, with a relatively strong importance given to conversations with peers and other adults.

Figure 3

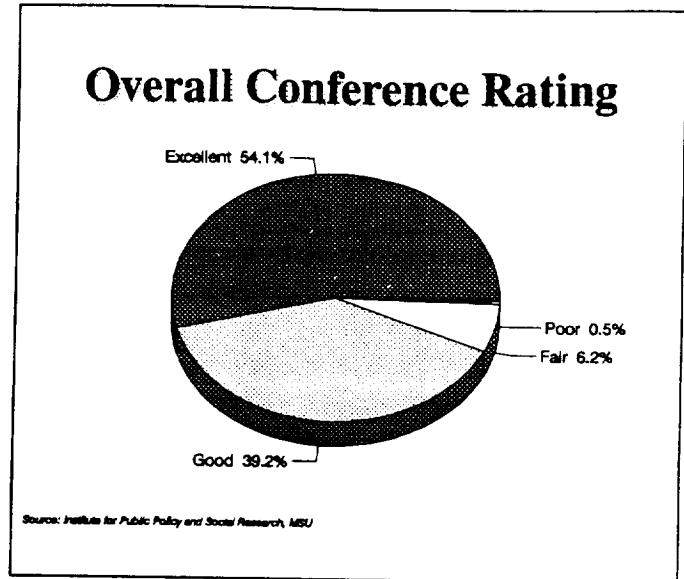


- Most conference attendees personally know other physicists or scientists. Nearly three-quarters (71%) of all students interviewed indicated that they were personally acquainted with individuals who have advanced degrees in physics or other sciences.
- Almost half of the participants cite one of the workshops as the most beneficial session of the conference. In the post-conference questionnaire, respondents were asked which session was most beneficial to them. One of five respondents (20.6%) regarded the workshop discussing graduate school preparation as the most beneficial. An additional 15% said that the workshops (in general) were the most advantageous to them while 6.7% mentioned the "employment" workshop and 2.8% remembered the "career" workshop as the most meaningful session to them. Featured speakers were not regarded as highly, however. Only 15.7% of the respondents mentioned one of the speakers or the speakers in general as being the most useful session of the conference. Nearly one of ten (9.4%) listed the roundtable discussions as the most beneficial segment of the conference.

- *Conference rates well among respondents.* Respondents were asked to give an overall rating of the conference. As Figure 4 indicates, over 90% of the respondents rated this year's National Conference of Black Physics Students as either "excellent" or "good". Only one respondent gave the conference a "poor" rating.

Included in this report is an appendix of open-ended responses listed verbatim from the respondents attending the conference. These responses are included for three questions: a listing of magazines regularly read by respondents, a list of actual responses to the question asking "most beneficial session", and a record of responses to the final question of the instrument, asking respondents to provide recommendations for future conferences. These responses were not coded into categories, but rather left to stand on their own as individual suggestions. Although the opinion of the conference was quite positive overall, these recommendations may contain some of the most important information to gain from this study, as it may facilitate better conferences in the future.

Figure 4



APPENDIX

Responses to Open-ended Items

Item A6 Why are you not planning to attend graduate school?

- I plan to attend medical school
- I plan to go to Med School
- I want a job.
- Because I'm going into engineering after physics to obtain a dual degree
- It depends on the type of work I'm interested in.

Item Aa2b Why are you not planning to attend graduate school?

- I plan to go to medical school
- Going to Medical School.
- I plan to attend Medical School
- I want to take some time off and work.
- because i'm in the dual degree physics-engineering program and
- I will attend engineering school instead of grad school
- I don't know if I want to go to school for half of my life

Item Aa4 What magazines or journals do you read on a regular basis?

- Black Collegiate.
- Time, APS Journal, Physics Today, PC World.
- Astronomy, Sky And Telescope
- Physics Today, Black Collegian
- Black Collegian, NSBE, Physics Today
- Scientific American, Newsweek, Physical Review Abstracts, Physics Today
- Ebony, EM, Essence, Jet, Sports Illustrated.
- Aerospace, Military Technology, Minority Engineers
- Black Collegian
- Science News, NSBE, Ebony Man, And BEA Journal
- Essence
- Scientific America, Science News, Physics Today
- Jet, Ebony, Essence
- Black Collegiate
- Physics Today
- Time, Newsweek
- Physics Today
- Scientific Journals, (Applied Optics, Physical Review, Optics Letters.
- Physics Today, Applied Physics
- Science, Physics Today, Newsweek
- Appl. Physics, Optics & Spechrscopy, Applied Optics, Laser Focus
- Physics Today

- Journals Of Crystal Growth , Optical Society Of America
- Physics Today, Scientific American
- Time, Reader's Digest, Ebony, Black Collegiate, NSBE Journal
- A Few Science And Engineering Magazines As Well As Fashion.
- Ebony, I Glance At Maclab
- Physics Today.
- Scientific America, Ebony, Jet
- Physics Today, Applied Physics D.
- Physics Today, New York Times Book Review.
- Physics Today, Applied Optics, Lasers And Photonics.
- Physics Today, Journal Of Crystal Growth, Computers In
- Physics.
- Phys. Rev. Lett., Optical Letters, Physics Today, Scientific
- American
- Physics Today, U.S. News.
- Omni, Scientific American.
- New York Times Science Section\Tuesdays, Books Bought From Barnes
- & Nobles That Interest Me.
- Am. J. Phys., Science, Optronics, Laser Focus World, R & D,
- J. Opt. Soc. Am. Phys. Rev.
- Nsbe Magazines, Black Enterprise, Black Colleges
- Journal Of African Civilizations
- Jet, New York Times
- Time, Science, Nature, Newsweek, Wall Street, New York
- Physics Today
- Wall Street Journal Physics Today
- Popular Mechanics Scientific America
- Optical Computing Magazines
- Physics Today Undergraduate Research
- Physical Review
- Time
- Emerge, Futurist
- Physics Today
- Discover
- Scientific American
- Physics Today
- National Geographic, Ebony
- Science
- Time Popular Science Scientific American Popular Mechanics,
- Society Of Physics Department
- Physics Today
- National Geographic, Explore, Popular Science Electronics, Car
- Stereo Review, Physics Today, Science And Time Magazine
- Scientific American, Popular Science, Physics Teacher, Physics Today
- Physics Today
- Physics Today, MRS Journal

Today

Appendix D

- Omni, Physics Today, Science, Physics Teacher
- Time, Sports Illustrated
- Jet, Ebony, EM, Physics Today
- Physics Today, Scientific American, Physics Teacher
- Physics Today, Optics
- Scientific American, Ebony, Jet, And Sports Illustrated
- Physics Today
- Essence, Black Collegiate, Physics Today, Ebony
- Science
- Black Engineer, Black Collegiate, Physics Today
- Laser Focus World, Nist Journal Of Research
- Scientific American, Physics Today
- I Read U.S News And World Reports, Omni, Ebony, And Essence Ebony
- Physics Today, Omni
- Wall Street Journal, Physics Today.
- American Journal Of Physics, Science.
- Scientific America, Discover Magazine.
- Popular Science, Popular Mechanics, Physics Today.
- Physics Today Sky&telescope Essence
- Optics Letters
- American Journal Fo Physics, Discover, Scientific American,
- Science News
- NSBE--National Society Of Black Engineers
- Science News, Science, Scientific American, Astronomy,
- Physics Today
- Sci American, USNWR, Physics Today, Byte, Time
- Keyboard, Electron Musician, Musician, Money.
- Ebony, Jet.
- Physics Today, Scientific American.
- Flex, Muscle And Fitness, Scientific American, Popular Mechanics.
- Scientific American, Discover.
- Scientific America, ACM Communications.
- Physics Today, Scientific America.
- X. Men Physics.
- N.S.B.E., Physics Today.
- Sound And Vibration, US Black Engineer, JAS.
- Source, Physics Today, Black Collegian.
- Popular Science, Discovery.
- NY Times, The Source.
- Pop. Mechanics, EM, FLEX, Muscle And Fitness.
- Time, Society Of Physics Students.
- Physics Today, Scientific America, Am. Journal Of Physics.
- Physics Today.
- Wall Street Journal
- Ebony, Essence, Jet, Black Excellence Quantum.
- Discover.

- Physics Today, Laser Optics.
- Material Resource Society, Phy Today.
- Physics Today
- Scientific American, Time, Jet, Popular Science, Life, Ebony,
- Essence, Billboard, Ysb, Rolling Stone, Writers Journal.
- Astronomy, Griffith Observer, Physics Review, Lots Of Astro Journals.
- Physics Today
- MAA Journal, Physics Today, Scientific American, Discover, National Geographic.
- American Journal Of Physics
- Physic Today
- Black Engineer
- NSBE, Class, Graduating Engineer, Minority Engineer, Elector
- Electronics
- IEEE-Spectrum
- Physics Today
- Scientific American, Physics Today
- Scientific American
- Physics, Laser Optics
- Physics Today, Scientific American, Portfolio.
- Comics- Batman, Spiderman (need To Know Characters Backgrounds
- Physics Today
- Physics Today
- Physics Today
- Black Collegian, Physics Today.
- Black Engineers.
- Jet, Ebony, Essence.
- Quantum.
- Time, Stereo Review.
- Optics Letter, Applied Optics, Lasers And Photonics.
- Physics Today, MRS Bulletin, Wall Street
- Discovery
- Science, Semiconductor International, Black Enterprise, Solid State
- Technology.
- None Of A Regular Basis
- Physics Today, APS Articles, Bulletins, Etc.
- Optics Letters, Journal Of Light Wave Technology, Applied Physics
- Letter, Optics + Photonics News, Physics Today.
- Time, Newsweek, Fortune, Forbes, Automobile, Car And Driver, Discovery
- Physics Today
- Quantum, Essence
- Science News Letters
- Physics Today
- Discover, Ebony
- PSC Supercomputing Newsletter
- Road & Track Gavin Report No Science On Regular Basis
- Popular Science, American Physist., Astronomy, Air&space

- No Science Magazines, Essence
- Jet Ebony Golf
- Scientific Magazine, Popular Mechanics
- Scientific American
- PC Novice, Physics Today, Vogue Mademoiselle
- Physics Today
- Discover, Physics Today
- The Washington Post
- New York Times, Scientific American National Geographic, Consumer Reports, Science News
- Physics Today, Popular Science
- Science
- Science
- Discover, Newsweek Ebony Jet Essence
- Physics Today
- Physics Today Reader's Digest
- Physics Today
- Physics Journal Ebony Jet
- Physics Magazine
- Popular Science Popular Mechanics, National Geographic, Omni
- Physics Today Time Newsweek Ebony
- Every now And Then I Read Discover

Item Aa7 During the two-day conference, which session was most beneficial to you?

- "Success In Grad School" discussion
- How to be successful in Grad School
- Workshops Concerning grad school
- In truth it was very beneficial
- Those "in Between" sessions! It was great to dialogue with other Black Physicists.
- Talk by Col. Gregory
- Jim Gates Talk
- Graduate Talks
- Getting Ready for/how to do well in grad. school
- The Final workshop
- Saturday-afternoon
- "Success in Grad School" discussion
- "Getting Ready for Grad. School"
- Careers in Sciences
- Group diss. or Grad. School
- Group Conference
- The workshops
- Speaker: Col. Gregory
- Col. Fred D & Dr. Warren's B speeches were Most inspiring

- Comm. Fair, student presentation
- Group Discussions
- Speeches and workshops
- "Issues facing Black Scientist"
- The individual sessions with our group leaders
- The undergrad presentations; "seeing" excellence in the
- Motivating speakers
- Second half of day two-careers in science
- Saturday morning and saturday afternoon.
- How to succeed in Grad School.
- Current topics in physics.
- Discussion session
- Succeeding in Grad School.
- How to make through graduate school.
- Small group discussions with other physics students.
- Getting to Graduate School.
- Prof. Gates
- Work shops
- Short talks/presentations.
- Careers in science
- Success in graduate school
- Workshops
- Getting ready for graduate school
- Success in graduate school
- Grads presenting research
- Career and education fair
- Issues Facing Black Students/
- 2nd. Day
- Graduate Information
- Sessions given by Henry Blosser, Jim Stith
- Col. Fred Gregory's Speech
- All
- Workshops
- All
- Getting ready for graduate school
- Rap sessions
- The speeches
- How to succeed in grad school
- The group workshops
- Actually, the entire saturday program.
- 04 group workshop
- Careers in Physics
- How to succeed in grad school
- The workshops
- Graduate workshop
- Presentations

- How to succeed in grad school
- Life after science, where are physicists today
- How to succeed in grad school
- All equally important
- How to succeed in graduate school
- Crsup
- Sessions w/ Col. Gregory, workshops about grad school
- Careers in physics
- Issues facing black scientists
- Career day
- Current topics in physics
- All the lecture sessions
- Succeeding in Graduate School
- Succeeding in graduate school
- The speeches, talks and workshops.
- Workshops
- How to succeed in grad school
- Those concerning graduate school
- Current topics in physics
- Group discussions
- Several of the talks by profs.
- The group discussion.
- Getting ready for Grad School.
- The guest speaker, Dr. Buck.
- The talk on Graduate School.
- First Session.
- The discussions Sessions.
- How to survive in Grad School and All workshops.
- All were beneficial but the conference with peers was inspiration.
- Excellent conference, Totally beneficial to me.
- Workshops
- Issues Facing Black Scientists.
- Taking Charge, Prof. Pat Cowrie.
- Col. Fredrick Gregory (He really inspired me to work hard).
- Issues Facing black physicist.
- Jim Gates' talk.
- Dr. Cynthia McIntyre, Col. Fred Gregory.
- Physics Education.
- Physics Education.
- Tour of Physics dept.
- Issues facing black scientists.
- All sessions.
- Workshops
- Graduate school sessions.
- "How to get into grad school"
- Talk by professional physicists.

- The talk about where Black Physics are during, today.
- Physics Education.
- 1st. group workshop
- Work Shop
- Issues Facing Black Scientists..
- Group Meetings
- Speakers
- How to Succeed in Graduate school.
- Group Discussions
- Paper Presentation
- Workshop.
- All of them
- How to succeed in Grad School
- Workshops
- How to succeed in grad school
- How to get into grad school
- Workshops
- Succeeding in grad school
- All
- How to succeed in Grad School
- Workshop
- Individual group session
- Grad school opportunities and how to apply, (help available)
- Workshop.
- Frederick Gregory Session.
- Workshops.
- Recruiting.
- The Role of Black Scientist in today's society.
- Workshops
- Graduate Funding.
- Nuclear Physics.
- Issues Facing Black Scientists.
- How to succeed in grad school.
- All of the lectures
- Issues Facing Black Scientists
- Careers in science
- Workshops on how to succeed in grad school.
- The talk given by Dick Gregory was inspirational because I can
- Identify with him as a successful black man.
- The workshops
- The graduate school sessions
- Workshops-how to succeed in grad school-getting to grad school
- Lectures
- Rap session
- Talks by Gregory and Buck
- At&T photon; Black physics

- Most of all of it but especially Col. Fred Gregory
- Issues facing black students
- The workshops
- Workshops
- Dr. Anthony Johnson's talk
- Dr. Gate's speech
- Seminar on the ultra fast optical phenomena
- How to apply to graduate school
- Group discussions
- Workshops
- The sessions dealing with graduate schools
- Workshops/ career fairs
- "taking charge" pat Lowrie
- The workshops
- Second session
- The first session
- Getting into Grad school
- Issues facing black students
- Workshop I
- The group session
- The student presentations

Item Aa8 Please tell us what would make the conference more interesting or helpful to you.

- Success in undergraduate studies..
- More individuals such as Dr. Gates and Dr. Buck!..
- Indicate where the conference will be held.
- Discussion about community responsibilities, what should be done,
- What are people doing.
- Get students more orientated with each other.
- Have some exciting experiments performed.
- More free time or two, 2)Journey to Detroit, 3)More recruiters((college and internship), 4)earlier-Nov./Dec. dates-in consideration of grad school and summer program deadlines.
- More conversation between graduate students and undergrads
- The conference went as well as I though that it would.
- Perhaps more variety graduate schools and more companies but
- I really enjoyed the conference'
- More Breaks, more room in hotel, no more than 2 per room.
- I like to say that, the conference be given an expanded exposure within the Black Physics community to bring more in Participants in future conferences.
- Continue the good work
- Smoking/Non Smoking for rooms
- More student presentation
- More of a focus on small group interaction

- 1. A workshop on implementations of ideas to deal w/critical issues facing black scientists.
- 2. More speakers for different areas of physics, w/ more diverse views on the current goals, and visions black physicists must reach for.
- A wider variety of careers in physics should be represented in the lectures given by professionals
- More time should be allowed for the different activities. Not so many activities, allow for travel plans that may be off schedule. Also have a larger education and careener fair, more schools and companies
- This was my first NCBPS. I was very impressed
- 1) Longer break-out groups- we had good interaction and could have used more time.
- 2) Detailed discussion on how to develop our own black owned and controlled institutions (schools, research firms, etc)
- 3) Group photo for all who attended the conference.
- 4) More student interactive sessions
- 5) Alternate menus for people with special dietary needs.
- Have more speakers from industry and/or entrepenureal endeavors.
- Just maintain the standard.
- Be more organized (In terms of Hotel space).
- Discuss personal issues associated with scientists.
- More time for small group discussion.
- Conference held up north should be held in the warmer months rather than in Feb.
- Having more workshops on strictly undergraduate research.
- More presentations & interaction with professionals who want others to succeed beyond or at same level as themselves.
- I feel it was one of the best conferences yet more options of places to visit w/state of the art physics in action
- I enjoyed the speakers but I wanted to hear more about their personal experiences and how hard it was to achieve not to have the seminars(meetings) so long without no breaks because your tension span gets short after a certain time of the day have most activities near each other
- All interesting
- Needs to be more defined since they are being presented to undergraduates. Often times we leave not understanding what the presentation was about.
- The Conference went smoothly and appeared to be well organized
- Increase the interaction and bring more companies for the career fairs
- 3 Days Thur, Fri, Sat
- Smoother transition of activities
- Make the presentations more general, it's very difficult for undergraduates to understand very specific, very technical doctoral theses.
- A more detailed career fair.
- More student participation in talks/seminars
- The conference needs to focus on bringing more HBCU graduate physics and engineering programs to conference.
- Including field trips to important places the conference is held.
- Everything was wonderful, however there was a little tight space in hotel rooms. Have

- a little more about graduate school other than that
- I enjoyed it very good meeting. One of the best!!
- Bring more women scientist, have one-on-one group/interactions w/blk professors
- None to think of .
- Instruction on problem solving, Instruction on how to do Research,
- Instruction on proposal writing, Using computers to Problem Solve
- The time schedule was a bit tight. Especially when speakers are involved it is best to plan time into the schedule for getting behind. It is often helpful to tell speakers they have 5-10min. Less than you are actually allotting them since most speakers plan to exceed their time limit for a few min regard less of what that limit is.
- Publications of papers presented
- Talk about school physics teaching as a career option
- Make it more relaxed(set up tours of the city and surrounding area)also keep stressing the different areas of research continuing the workshops tours to major research corporations
- The conference needs more tutoring expeditions.
- No more than 2 females in a room, more female speakers
- Conflicts facing students in graduate school.
- For a room large enough for two people should only accommodate two people, more men speakers
- More emphasis should be given on student research
- Presentations
- The speakers were excellent. I think more should be put int explaining how to apply for fellowships like NSF, Ford Foundation, NPSC, DOD, etc. The addresses of these organizations can be compiled and mailed to all juniors, seniors, and grad students.
- More variety and quantity in food, more rooms
- I feel that all conference meetings, like some were this year, be held in the hotel or one place instead of many different places. This years conference is 110% better than last years in that the meetings were in one or two different places in close proximity to the hotel. Thanks
- Increase length of conference. Provide more influential people so that contacts can be made
- Please expand the career fair! it is important to talk to graduate school recruiters about the choices.
- Don't overcrowd the rooms, publish the conf. in a newsletter.
- The travel arrangements were terrible.
- Have more time allotted for student interaction.
- Workshops work
- Keep on with the small workshops.
- Overall the conference was very beneficial and interesting, but I would suggest that a small portion of the time would be devoted to exposure of the host city. Is not that the reason for having it in different cities?
- I would like to see more talks by women physicists. I also think there should be more time to talk to the speakers.
- Foremost, please work out the time constraint. I felt rushed throughout the entire conference.

- Disperse technical talks with nontechnical ones, lightening the mood and preventing the monotony of presentations.
- Time management could be slightly improved apart from that the conference was excellent.
- There should be more free time.
- The conference would have been better if they emphasized more on specific branches of Physics. Such as theoretical Physics.
- It would be more helpful if it wasn't so rushed.
- The discussion section on issue facing black scientists should be longer.
- Career Fair: write more schools and companies.
- It would help keep our attention if we had more workshops and spread them out so we won't be listening to everyone talking everywhere. That's gets to be boring if they're not interesting.
- Most of all the talks and workshops were interesting.
- I recognize that time was a key factor and that the schedule had very little flexibility, so we need some flexibility. Secondly, all our activities except field tours should be centralized in one place.
- A longer Stay.
- Spread the events (talks, workshops, etc) out more so that the students will not get burnt out after the first day.
- Have more Interesting speakers such as Frederick Gregory.
- Set some of the lectures on a level that a sophomore with limited knowledge in Modern Physics, relativity and Quantum Mechanic can understand what is occurring.
- Have some cold medicine!
- I think the workshops can be extended to include role playing. eg students/participants successfully selling their credentials to a different or indecisive prospective employer.
- Not interested.
- More tours through labs.
- I have no suggestions.
- More students should be allowed to present the papers and also encourage the students to present the paper.
- Maybe you can incorporate an info session for grad students just starting their program and their adjustment period. Like dealing with pressure from peers and prof.
- To have the conference located in the South.
- More speakers should be invited
- More Career/Education Fair Participants
- A problem solving session math and physics
- More initiated talk between speakers organizer and student.
- Make Poster Session.
- To see current Research projects actually taking place. As a student from a small university, large scale research motivates me to work harder toward a Ph.d.
- Being able to bring another student from my school to the conference
- More of an open forum where we the students discuss openly our struggles and triumphs. A time for us to share social issues. Stress management seminar, behavior support. How to rebound after being put down, i.e. exams, advisor, qualifiers, research.
- Discuss the statistics of # of black Ph.Ds give us the demographic

- Longer conference, more field trips/ tours
- More for importance of presenting abstracts
- More lo-fat selections (yogurt-> ice cream) Keep the workshop structure
- Keep a concentration on grad. students, or grad student funding
- More hands on mini-workshops, how to prepare for the GRE
- Not having lengthy session back to back. It can become very tiring
- I really enjoyed it!
- I think it would be interesting if we could have more direct participation in the conference.
- Astrophysics Session
- Give a list of activities on the campus (parties, ball-games, etc)
- I think the small workshops should be limited to 2 because going to lectures and workshops on a continuous basis is tiring.
- Yes, more time to investigate more subjects in physics.
- Advertise in national media. Solicit more recruiters from academia and industry
- Not as packed with stuff. I'm exhausted!
- Compile a booklet of things to look for in undergraduate and graduate text. A booklet which boils down all of the math derivations and gives a quick synopsis of important formulas and their uses.
- More diversity in topics
- More opportunities to meet with grad students and more time for career conference
- I would like to see recruiters from HBCU's and have graduate programs in physics and engineering.
- I think the students should get more time to talk to the speakers one on one.
- Presentations on the use of computers would be very interesting since the wave of computers has virtually splashed on all endeavors of science
- More schools.
- More on other options w/physics such as engineering
- More time between events, not such a hectic scheduling and make sure the lecturers speak on physics more than politics that they don't understand.(jim Gates)
- Not having such a tight schedule
- More spreading and flexibility in the schedule.
- Discuss issues that are not related necessarily to graduate school have more open-minded discussions.
- Provide computer access
- Keep up good work
- How do we help to encourage others to do their best in all endeavors?
- This was my first physics conference so I was extremely impressed
- I really have nothing to compare it to but the hotel food was horrible, (maybe because I'm from Louisiana!)
- Focus on undergrads more & better food
- Being able to talk with more grad students, one-on-one about college life and courses
- More social functions during the evenings
- More group sessions
- Recruiters- both college and industrial.



ROBERT E. SCHILLER
Superintendent of
Public Instruction

STATE OF MICHIGAN
DEPARTMENT OF EDUCATION

P.O. Box 30008
Lansing, Michigan 48909

April 6, 1993

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Victoria Simon
Department of Physics and Astronomy
Michigan State University
East Lansing, MI 48224-1116

Dear Victoria:

Enclosed is a summary of the responses to the questionnaire you distributed for us at the National Conference of Black Physics Students. More than one hundred students responded.

Most interesting is the large number of students whose families have not had a college education. This debunks the common myth that it will take a couple generations to increase minority student participation in science.

The students identified strategies that would be helpful to keep them on track. They will be very useful in our work.

Many thanks for your help.

Sincerely,

Judy Martin
Assistant Director

Enclosure

Appendix E



**National Conference of Black Physics Students
Michigan State University
Student Questionnaire
February 12-13, 1993**

1. Level of Study	
Undergraduate	81
Masters	12
Doctorate	18
2. Academic Program	
Physics	80
Physics/Math	8
Mathematics	4
Other	10
Unanswered	9
3. Career Goal	
Phd	24
Physics Related	20
Research	20
Teacher/Professor	13
Engineering	8
Astronaut	2
Undecided	7
Other	13
Unanswered	4
4. Have others in your family received a college education?	
Yes	57
No	52
Unanswered	2
5. What did family members do to encourage and support your study of math and science?	
Provided encouragement and support	54
Nothing	16
Provided tutoring	6
Provided additional extra-curricular academic programs (e.g., after school and summer science programs)	5
Provided role models	5
Provided financial support	4
Other	10
Unanswered	11
6. What more could your family have done to help you?	
Nothing	33
Provided more learning opportunities	15
Given more encouragement/pushed me harder	13
Not Sure	5
More financial support	3
Other	5
Unanswered	37

7. School setting for K-12 education	
Urban	55
Rural	30
Rural & Urban	1
Unanswered	25
Public	78
Private	19
Private & Public	4
Unanswered	10
8. Is there anything teachers or other school faculty did to help or hinder your interest in math and science?	
Discouraged/didn't offer any help	36
Encouraged/offered some help	35
Other means of help (e.g., inspiring and interesting classes, help to find scholarships)	14
Individualized attention from one particular faculty member	12
Other obstacles placed (e.g., large classes, couldn't get the classes wanted)	5
Unanswered	9
9. Who, if anyone, helped you in your academic studies in the K-12 grades?	
No one	27
Family	22
Teachers/schools	15
Church members	5
Neighbors	5
Friends/peers	5
Other community leaders	5
Clubs/organizations	4
Unanswered	23
10. What could community members or organizations have done to help you more?	
Provide role models/encouragement	22
Provide more programs	19
Provide financial support	11
Provide tutorial services	10
Nothing	8
Other	3
Unanswered	38
11. At this point in your academic career, what do you need to ensure that you will reach your career goal?	
Self-determination	32
Financial Support	25
Outside motivation/support	25
Support/help from university	10
More time and management skills	4
Nothing	3
Other	4
Unanswered	8

12. What is the most effective thing that should be done to ensure that more students study math and science in middle school and high school?

More encouragement from other to pursue math/science	23
Show the applications of math/science (e.g., more lab work and hands-on activities)	22
Make math/science interesting and fun	18
Have more/better teachers	11
Mandatory requirements	9
Provide earlier and more exposure to math/science	8
More role models in the fields of math/science	7
Provide more programs to promote math/science	4
Unanswered	9

NCBPS '93 Demographics

The following numbers are approximate using data from one week before the conference.

Previously attended:

107 Have previously attended (44%)
127 Have never attended (53%)
7 Don't know

Institutions

73 Different insitutions (represented by 1-28 students)

Students by major

221 Physics (92%)
18 Engineering
15 Math
3 Computer Science
3 Biology
2 Chemistry
1 Philosophy
1 Business
1 Biochemistry/pharmacology
1 Undecided
5 No response

(30 were double majoring)

Classification

75 Graduate students (31%)
160 Undergraduate (66%)
6 Unknown

Gender

151 Male
90 Female