



July 15, 2005

The Southeastern Universities Research Association (SURA), a consortium of over 60 universities in the Southeast from Delaware to Texas is seeking to facilitate and assist with the development of multi-institutional programs to increase the number of minority PhD's in physics and related fields. This would include involvement of universities with significant minority enrolment, including officially designated Minority Serving Institutions (MSI's): Historically Black Colleges and Universities (HBCU'S) and Hispanic Serving Institutions (HSI's).

The participants in a workshop at Vanderbilt in April 2005 strongly endorse this initiative, as do agency representatives who attended the meeting. The attached Request for Proposals (RFP), prepared by David Ernst of Vanderbilt, and who has agreed to be SURA's coordinator for this program, emerged from that workshop.

I urge you to consider the RFP. Increasing minority representation in physics and other natural sciences is clearly in the national interest. As our region is home to a majority of our nation's MSI's, this is a special challenge as well as opportunity for SURA to assist in this initiative. Please review and help ensure this document is distributed to the right individuals on your campuses. This RFP is available on the SURA web site at http://www1.sura.org/3000/3400_MSIRFP.pdf. Any comments and suggestions, including information about ongoing initiatives, are also welcome.

A handwritten signature in black ink, appearing to read "Jerry P. Draayer", written in a cursive style.

Jerry P. Draayer
President and CEO

SURA MSI (Minority Serving Institutions) Program Request for Proposals

The Southeastern Universities Research Association (SURA) seeks to facilitate and assist with the establishment of multi-institutional programs designed to increase the production of minority PhD's in physics, astronomy, and closely related fields. The under-representation of minorities in physics is a problem which requires some new and innovative programs if progress toward a solution is to be made. Below are outlined two types of programs that SURA believes will have a real impact on the production of minority PhD's and that have a good possibility for funding. The goal is to foster graduate education and research collaboration among scientists at established research institutions and those that currently have limited capabilities and resources in science. These efforts would include involvement of universities with significant minority enrolment, including officially designated Minority Serving Institutions (MSI's): Historically Black Colleges and Universities (HBCU'S) and Hispanic Serving Institutions (HSI's). A necessary ingredient will be to build infrastructure at MSI's.

This request is sent to all SURA member institutions (trustees and chairs of physics departments) and to the chairs of physics departments at all MSI's in the region. Ninety percent of the HBCU's and seventy percent of the HSI's are in the SURA region. SURA is a logical organization to initiate this project. The project, as with all SURA projects, is not limited to the region. Institutions from throughout the US will be added as appropriate.

Please read the following and respond if your institution has an interest in participating. *If you would like to meet with SURA officials and other university representatives to clarify exactly what participation means, please let us know the dates from now through August 31 when you are available. SURA is willing to organize an informational meeting at its headquarters in Washington, DC.*

Program 1. Curriculum Enhancement

Form a group of Research 1 universities and MSI's that offer at least bachelor's degrees in physics and construct a mutually supportive system that will provide students with a variety of pathways to attain the PhD degree. A number of features that could be a part of such a program include:

- Many MSI's are limited in the physics curriculum that they can offer their majors, particularly upper level undergraduate courses, or courses in astronomy. Member universities will make a few well-chosen courses available to MSI students through distance learning. The students will sign up for "Special Topics" at their home institutions and be an addition to an existing class at the originating university with the permission of the research university's instructor and of the student's home faculty.
- The instructor of a distance learning class will visit the MSI students who are taking the class and their institution at least once during the semester the course is being offered. Relationship building between all participants is a key ingredient of the program.
- Special summer research experiences will be created for students in the program. These could take the form of a two year REU (Research Experiences for Undergraduates) type program, could include special training in physics designed to help increase GRE scores on the subject test, special training for the general GRE's, and research experiences for faculty as well as students. Needs will be identified first and then the most appropriate

programs will be designed to meet those needs. The advantage of a consortium is that multiple needs can be satisfied by having a variety of programs spread throughout the participating universities.

- Programs need not be limited to bachelor's degree students. For some students, the preferred pathway will be to first pursue a master's degree at an MSI. It will be most important that such students continue on in as seamless way for the PhD degree.
- Support for students to attend professional meetings will be provided. The most appropriate meeting will be chosen by the student and involved faculty; these could be APS, NSBP, NSHP, SACNAS, or specialized topical meetings.
- Support for sabbaticals at research centers for faculty from MSI's will be provided. For cases where the home institution does not have a sabbatical program, full support for the sabbatical would be required.
- MSI's will be assisted in adopting a "standard curriculum," perhaps the one proposed by the APS Committee on Minorities in 2004.
- The PhD granting institutions will evaluate the educational programs at the bachelors and master levels. For all participating institutions, information will be provided describing which courses will be awarded what type of transfer credit. Clear input on what a successful student's standing would be upon admission to a particular PhD program is important. This information will allow for clear advice to students on how to make a smooth transition into a PhD program.
- Perhaps the most important ingredient is to establish a proactive mentorship program where a student has mentors from several institutions, at least one from an MSI and one from a Research 1 institution, who will take an active role in advising the student. The universities participating in this program will identify several faculty members known to have built the personal relationships with students that lead to the level of mentorship envisioned for this program.
- Research ties are an important way to build strong relations between individuals and institutions. Research themes of mutual interest to the participating institutions will be identified and joint funding sought. This could fall under Program 2 below, be an integral part of Program 1 and its funding, or be some projects that are independent of the SURA program.

The features noted above and others to be thought of will enable a network of universities to construct specific programs for identified undergraduate (and masters) students. These students would have a greatly enhanced support system and a choice of a variety of pathways to the PhD thus expanding the number and quality of minority students who pursue the PhD degree. The first step is to identify the universities who will participate in this program and then have them build the specifics of the program such that they fit their own interests and especially fit within their internal institutional rules.

Initially a pilot program involving a limited number of institutions is being proposed. A learning curve for such a new project will be necessary and this requires starting with a program of manageable size.

The level of funding necessary for this project could be very little. If the coordination of existing programs is all that will be involved, the cost will only be to support the necessary administrative needs. A more ambitious and larger impact program will include money for travel between member institutions, money to buy down teaching loads at institutions where this is necessary in order to provide time for faculty to fully participate, money for the special summer programs, and finally money for the support of students. Since this is a new and innovative proposal, there does

not exist a source which is already identified for support of this program. SURA will work with federal agencies, private foundations, and others to seek support.

Program 2. Research Enhancement

As noted above, strong ties between individuals and institutions can be built by joint research projects. Research projects between a couple of universities can best be pursued by the universities themselves. In this case the value added by SURA participation is not clear and the universities should proceed independently of this program. Here we seek multiple university consortia. Financial support for these programs can come from a variety of sources such as regular research grants from NSF, DOE, NASA; the IGERT program at NSF; the MRI programs at NSF or DOE, etc. SURA can help to identify an appropriate cluster of universities centered on a research topic and it can help to facilitate the initial interactions.

Where SURA brings the most value is facilitating the creation of large, multi-institutional research projects and serving, when appropriate, as the entity that receives the funding on behalf of the consortium. Such research consortia can include universities of a variety of sizes and levels of expertise as well as government labs. A necessary ingredient for such a project to fall under this particular program is enhancing the research and educational infrastructure at the participating MSI's. Infrastructure can include hardware, faculty knowledge and expertise, and support for students and faculty at the MSI's. At some institutions it will be important and necessary to either negotiate reduced teaching loads or to buy down the teaching duties of the faculty. Since buying down the time of faculty is expensive, guidelines on when and how to do this will need to be developed. In all cases a goal will be to build the capacity, or expand existing capacity, such that the MSI's involved become visible and better recognized participants in the science.

The following proposals for research topics have emerged already:

- Computational science and grid computing, this merged with computational problems in astrophysics, nuclear/particle physics, and/or biophysics.
- Neutron science and its applications to nanoscience. This makes use of the Spallation Neutron Source (SNS) at Oak Ridge National Lab, the world's leading facility in neutron science and the opportunity that the SNS offers when it comes on line in a couple years. The timing is excellent as there is an opportunity to influence the instrumentation being built while producing the science is imminent.

These topics reflect the interests of a group that met at Vanderbilt University in April 2005. This group generated the thoughts contained in the RFP. Building research consortia around other topics is encouraged. The key to success will lie with identifying key players. SURA can facilitate and administer, but the science and real leadership must come from individuals who are passionately interested in building a consortium.

Since science at universities necessarily involves students, there is a strong overlap with Program 1 above. Building a research consortium should necessarily include building programs that serve the students at the participating institutions. The difference between the two is one of emphasis. Is the lead topic and major emphasis on building educational programs (Program 1)? Or is it on research and would the funding be from research grants (Program 2)?

Proposals

To initiate the process each institution is asked to submit a “statement of interest”. It should be short and contain a description of the department and the university, including size of the university, size of the faculty in physics and related fields, specific thoughts on interests and the role your department might play, and number of graduates at all levels. For Program 1, a description of needs or resources that make the department particularly suitable for participation will be helpful. For Program 2, research interests and capabilities need to be briefly described. Note that research areas other than the two mentioned above are being sought.

This solicitation is intended to start an informal and iterative process. From the expressions of intent, SURA will initiate dialogues among faculty and institutions which have overlapping interests. From these dialogues will emerge the final detailed programs and proposals for funding. We believe that the most successful programs will be those that are constructed by the participants themselves.

There are two broad concepts for programs outlined here. SURA will entertain any ideas for programs or research areas under Program 2 that one might wish to put forth. This request is *not* intended to limit discussions of any program that would possibly address the situation of attracting more minorities into physics. Hopefully the dialogues generated by this initiative will lead to other new ideas.

Also, a reminder that if you would like to meet at SURA headquarters in Washington, DC to further clarify what is being proposed, please let us know dates when you would be available before August 31.

If you have questions, please feel free to contact David Ernst, Professor of Physics at Vanderbilt University (david.j.ernst@vanderbilt.edu, 615-343-0483), and the coordinator of this program.

Statements expressing an interest in participating should be sent electronically (MS Word format preferred) to David Ernst (david.j.ernst@vanderbilt.edu) and to Hugh Loweth (hloweth@sura.org).