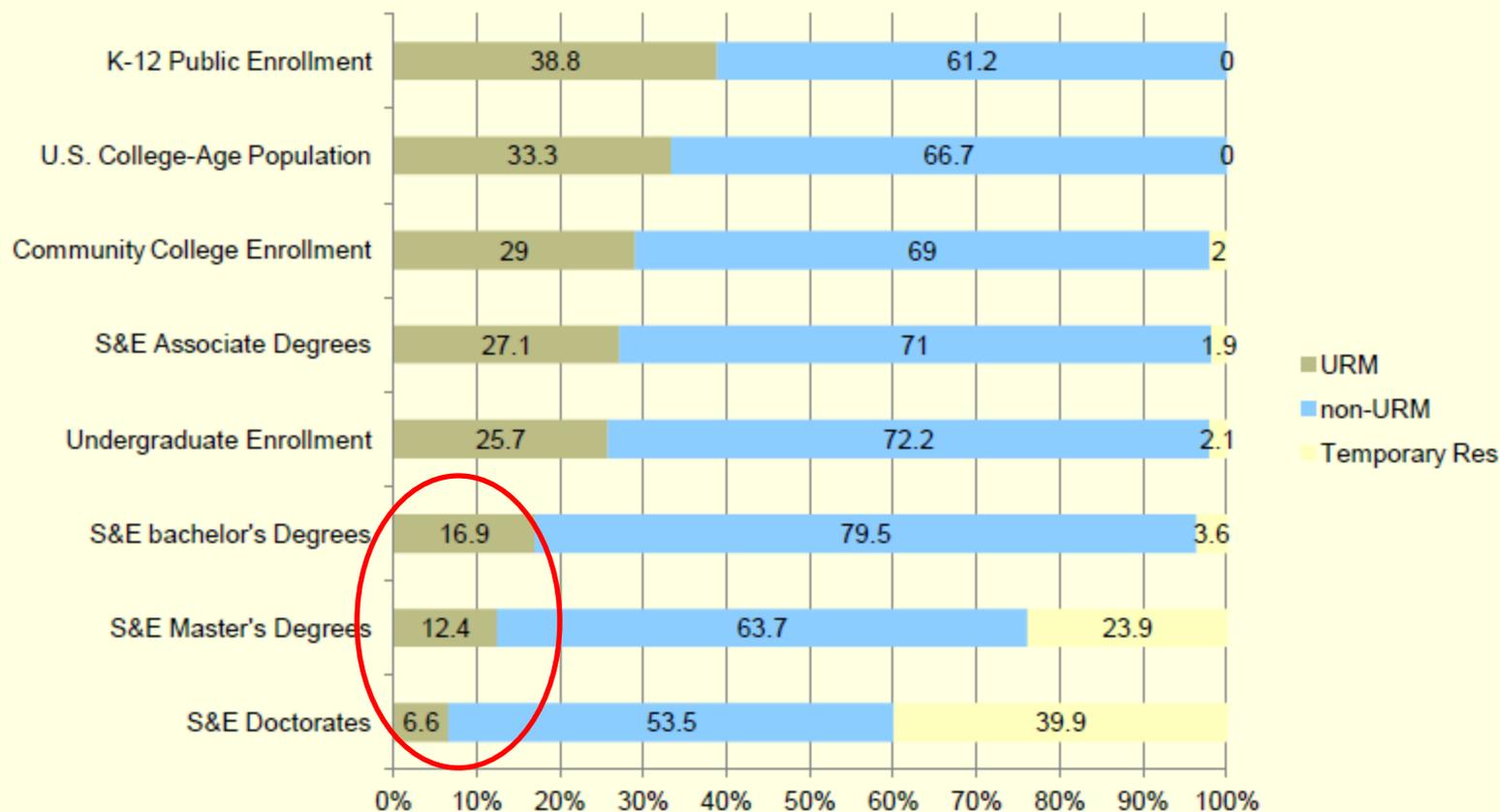


**Inclusive Astronomy 2015 Meeting:  
Diversity and Workforce Development  
for NASA Astrophysics**

*Keivan Guadalupe Stassun  
Vanderbilt University*

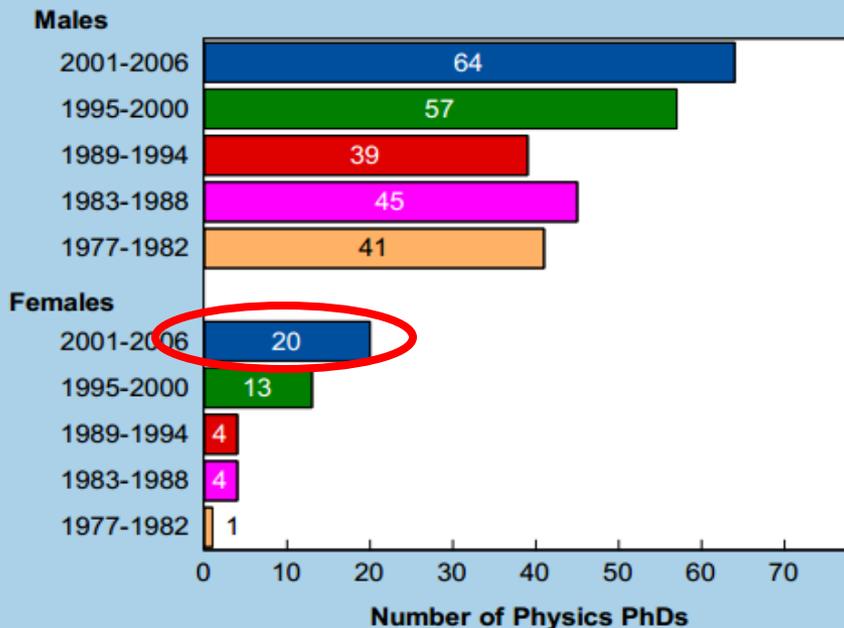
# Astrophysics Diversity Statistics

## Enrollment and Degrees, by Educational Level and Race/Ethnicity/Citizenship, 2008



**“Expanding Underrepresented Minority Participation”  
National Academies (2011)**

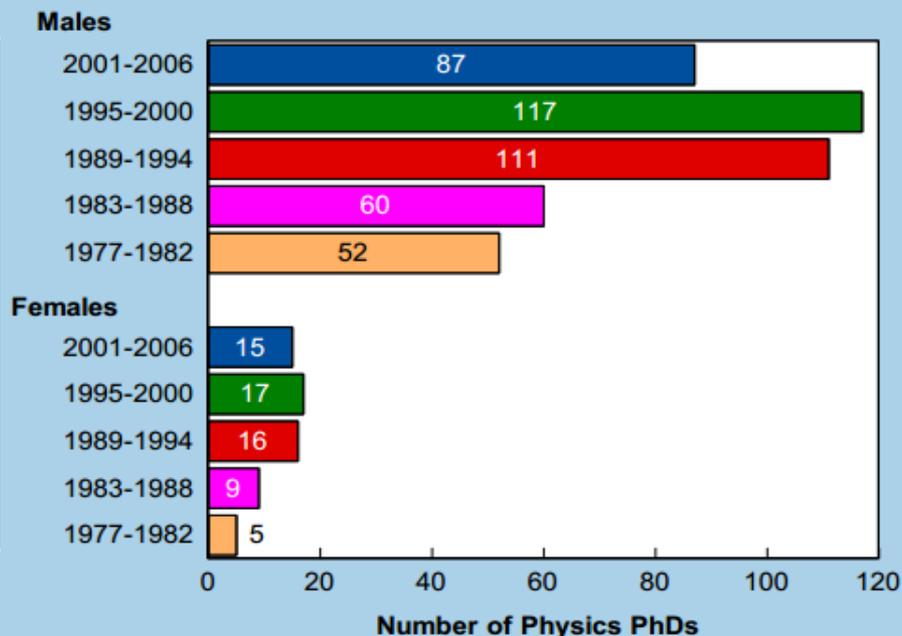
**African Americans earning physics PhDs by sex for each 6-year period from 1977 through 2006.**



AIP Statistical Research Center compiled data collected by the NSF.

<http://www.aip.org/statistics>

**Hispanic Americans earning physics PhDs by sex for each 6-year period from 1977 through 2006.**



AIP Statistical Research Center compiled data collected by the NSF.

<http://www.aip.org/statistics>

**Race and Ethnicity of Physics PhDs, Classes of 2010 through 2012.**

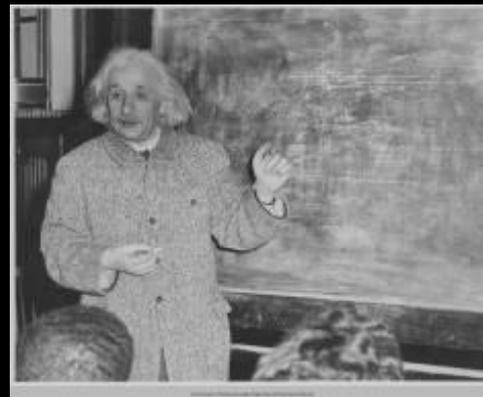
	3-Year Average Number	Percent of all Physics PhDs	Percent of U.S. Physics PhDs*
White	744	45	88
Asian American	41	2	5
Hispanic American	28	2	3
African American	17	1	2
Other U.S. Citizens	13	1	2
Non-U.S. Citizens	826	49	-
Total	1,669	100%	100%

\*Based on a 3-year average of 843 U.S. citizens.

<http://www.aip.org/statistics>

# Where are the minority undergraduates in physics and astronomy?

- Top 10 producers of Black physics baccalaureates are all HBCUs.
- Just 20 HBCUs produce 55% of all Black physics baccalaureates.
- HBCUs are the top 8 baccalaureate origin institutions of future African American Physics/Astronomy PhDs.



## Universities that awarded the most physics bachelor's to African Americans.

Physics departments in these twenty universities awarded more than 55% of all physics bachelor's degrees earned by African Americans since 1998.

Alabama A&M University  
Benedict College  
Chicago State University  
Delaware State University  
Dillard University  
Fisk University  
Florida A&M University  
Grambling University  
Hampton University  
Jackson State University  
Lincoln University  
Morehouse University  
Morgan State University  
Norfolk State University  
North Carolina A&T State University  
Southern University and A&M College  
Spelman College  
Tennessee State University  
Tuskegee University  
Xavier University

The physics departments on this list reported conferring 15 or more bachelor's degrees to African Americans between 1998 and 2007.

Source: AIP Statistical Research Center, Enrollment & Degrees Survey

# Historically Black Colleges and Universities

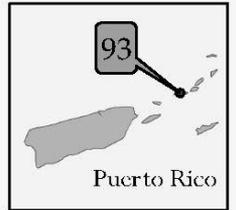
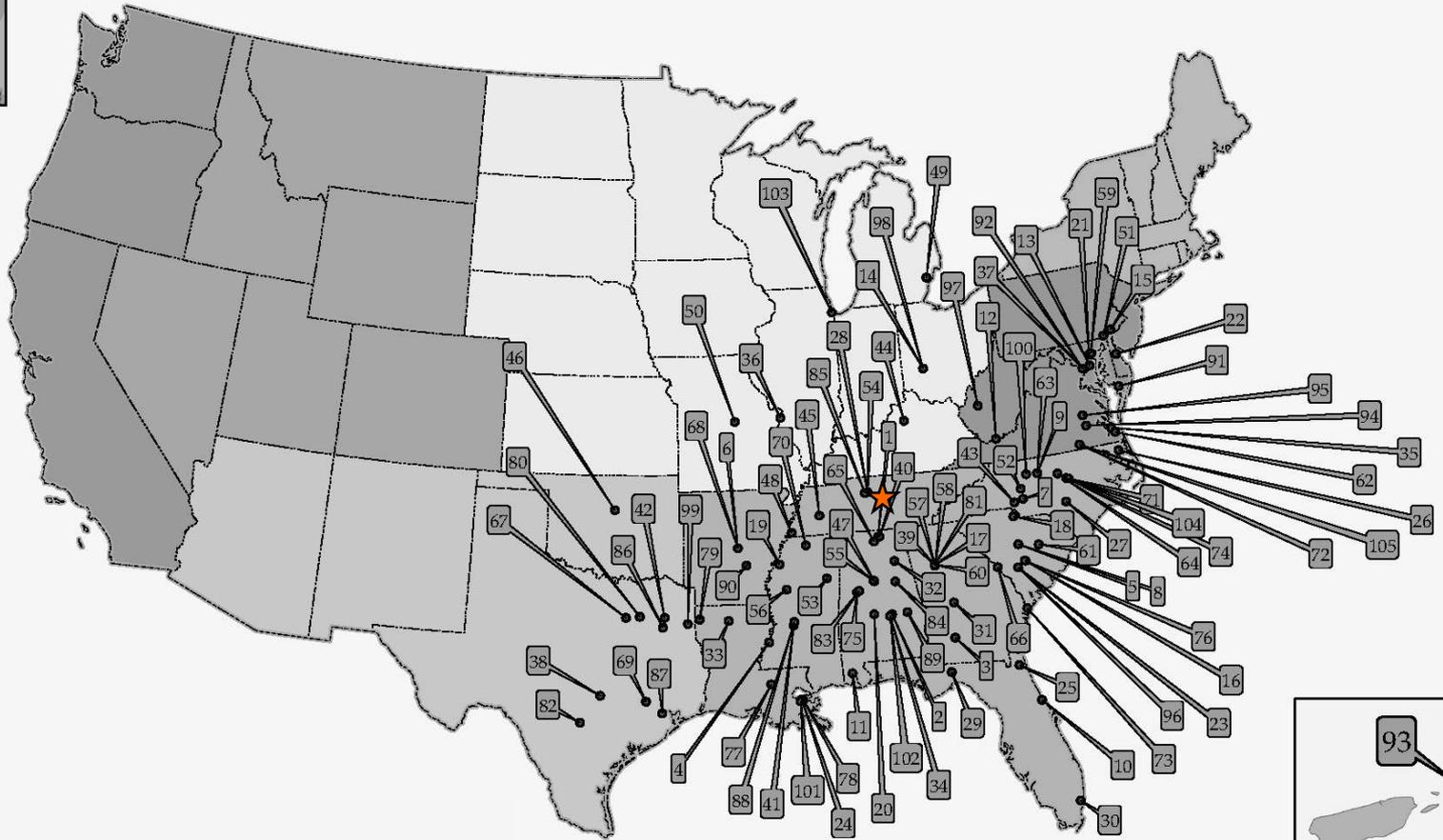
\*\*Based on US Department of Education Statistics, 2003-2004



Alaska



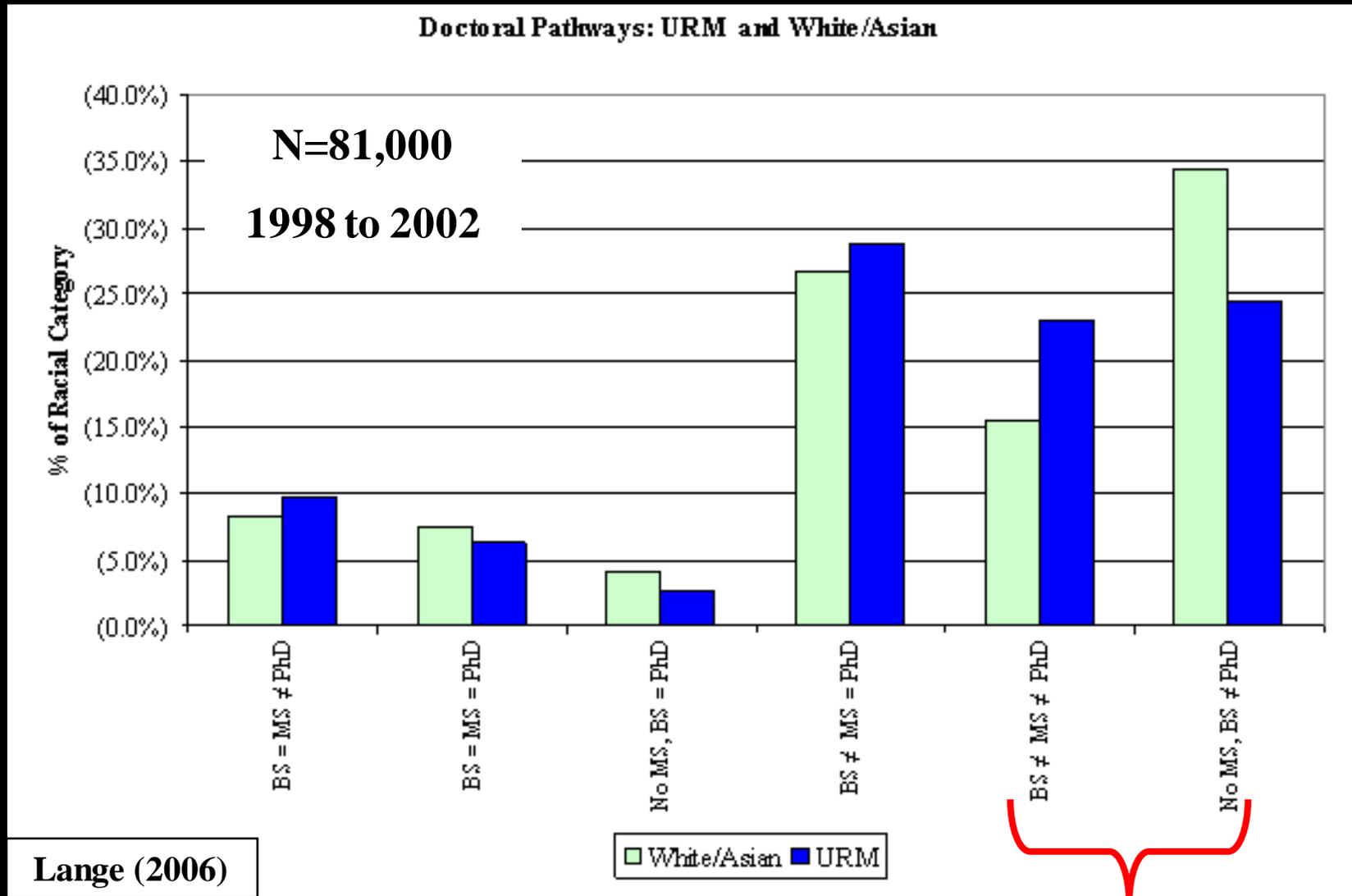
Hawaii



93

Puerto Rico

# The importance of bridging the transitions



Underrepresented minorities ~50% more likely to earn Masters en route to PhD.  
More institutional transitions, with less guidance.

# Underrepresented Minorities in the 2010 Decadal Survey

By all measures minority Americans are seriously underrepresented among professional astronomers, and women have not yet achieved parity. For many reasons, improving the involvement of minority Americans and women is a matter of the highest priority. As discussed in Chapter 4, the committee came to the following two conclusions:

**CONCLUSION: Little progress has been made in increasing the number of minorities in astronomy. Agencies, astronomy departments, and the community as a whole need to refocus their efforts on attracting members of underrepresented minorities to the field.**

One way to accomplish this bridge would be to encourage strategic partnerships<sup>18</sup> with Minority Serving Institutions (MSIs) including Historically Black Colleges, as well as with the National Societies

The following are some approaches that can be adopted in order to help in the attraction and retention of minorities in astronomy:

- Targeted mentoring programs;
- Partnerships of community colleges and minority serving institutions with research universities, and national centers and laboratories;
- Expanded funding for programs that ease the transition of individuals across critical junctures in the pipeline—high school to college, community college to university, baccalaureate to graduate school;
- Funding for master's to phd programs,
- Cross-disciplinary training as an on-ramp to astronomy and astrophysics careers; and
- Family-friendly policies.

# CAREERS

**EQUALITY** Lack of female academic leaders misrepresents faculty and students **p.473**

**RECESSION** Basic research increasingly targets societal outcomes **p.473**

**NATUREJOBS** For the latest career listings and advice [www.naturejobs.com](http://www.naturejobs.com)

VANDERBILT PHOTO/DANIEL DURBIN



Vanderbilt University, Tennessee, is the leading US producer of minority graduates with PhDs in astronomy, physics and materials science.

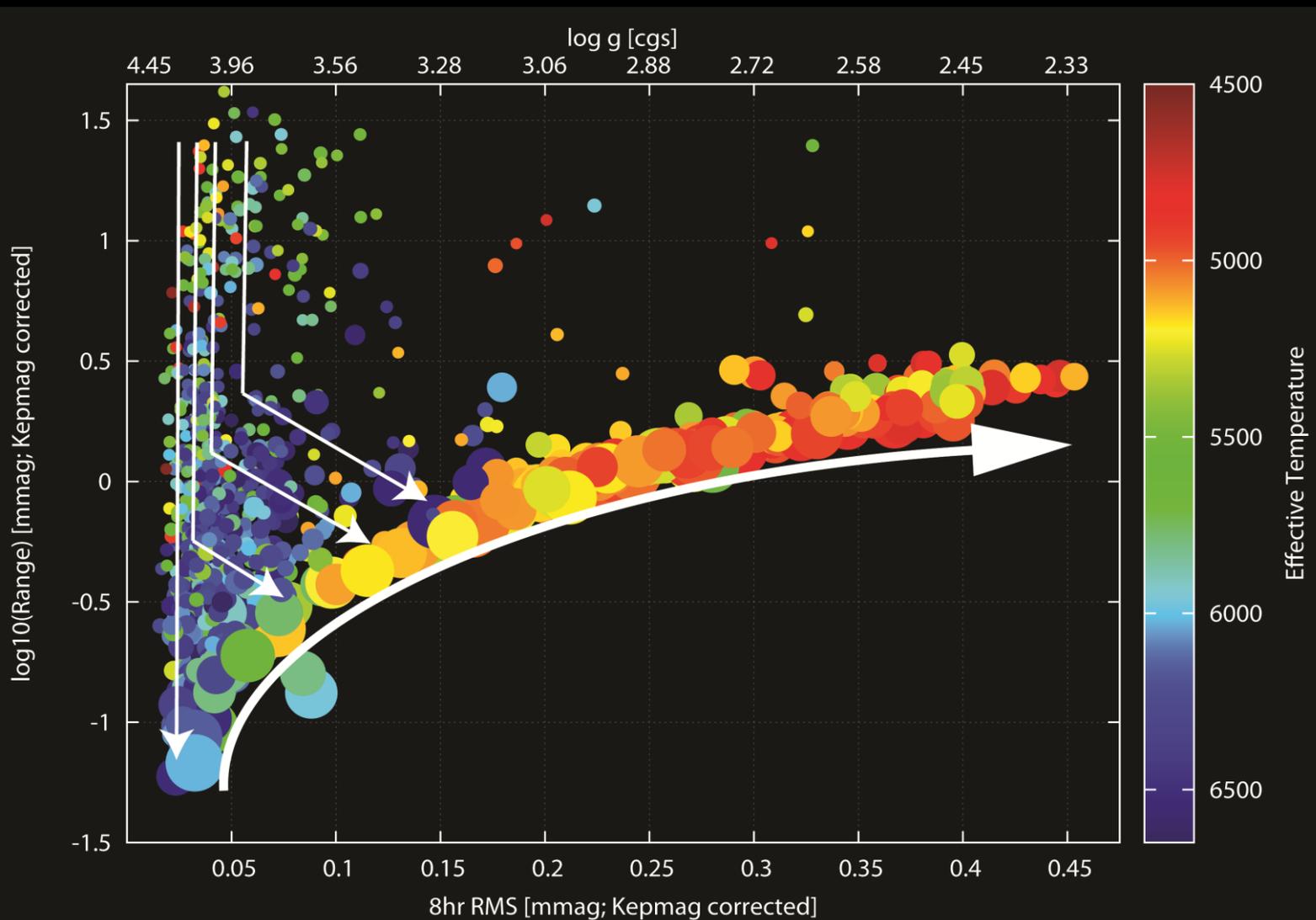
HIGHER EDUCATION

## On the lookout for true grit

*With the right mix of persistence and support structures, scholars from minority groups can thrive as they pursue their PhDs.*

***Fisk-Vanderbilt Bridge Program (Nature, 2013, 504, 471)***

# Using stellar “granulation flicker” to measure accurate stellar gravities and planet densities with *Kepler/TESS*



**Fabienne Bastien**  
(Penn State)

**Bastien et al. (2013, *Nature*)**

# Agency programs focused on underrepresented minorities and workforce at graduate/postdoc levels

## **Partnerships in Astronomy & Astrophysics Research and Education (PAARE)**

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**PROGRAM SOLICITATION**  
**NSF 13-566**

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**REPLACES DOCUMENT(S):**  
**NSF 08-562**

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**National Science Foundation**

Directorate for Mathematical & Physical Sciences  
Division of Astronomical Sciences

**Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time):

August 27, 2013

August 21, 2015

Third Friday in August, Every Other Year Thereafter

### **Synopsis of Program:**

The objective of PAARE is to enhance diversity in astronomy and astrophysics research and education by stimulating the development of formal, long-term, collaborative research and education partnerships among minority-serving institutions and partners at research institutions, including academic institutions, private observatories, and NSF Division of Astronomical Sciences (AST)-supported facilities.

Text Size  

Gretchen Cook-Anderson  
Headquarters, Washington  
(Phone: 202/358-0836)

September 23, 2003

**RELEASE : 03-302**

### **NASA Names Minority University Space Science Education Partners**

NASA announced today the 16 recipients of the 2003 Minority University College Education and Research Partnership Initiative in Space Science (MUCERPI) award.

Dr. Clifford W. Houston, NASA Deputy Associate Administrator for Education Programs, announced the winners at the Emerging Leaders Youth Workshop in conjunction with the Congressional Hispanic Caucus Institute (CHCI) Issues Conference at the Washington Convention Center.

MUCERPI offers minority universities an opportunity to develop academic programs and/or faculty and student capabilities in space science through close partnerships with major space science research groups. The capabilities developed under this initiative may include research, undergraduate or graduate courses or degree programs, pre-college or public outreach programs, and/or teacher training in space science.

"This initiative develops significant opportunities for students in the K-12 environment and students at minority institutions of higher learning to engage in space science exploration and research," said Dr. Adena Williams Loston, NASA Associate Administrator for Education. "This initiative assists us in expanding the educational pipeline and future workforce."

The 2003 MUCERPI awards include eight Historically Black Colleges and Universities, five Hispanic-Serving Institutions, two Tribal Colleges and Universities, and one predominantly minority university. The awards are three-year grants offering up to \$275,000 per year. MUCERPI's period of performance is January 1, 2004, to December 31, 2006.

"The success of this initiative comes from the willingness of our leading space science researchers to participate as active partners and to work seriously to help develop space science capabilities at minority institutions," said Dr. Edward J. Weiler, NASA Associate Administrator for Space Science.