

In Search of Excellence and Equity in Physics*



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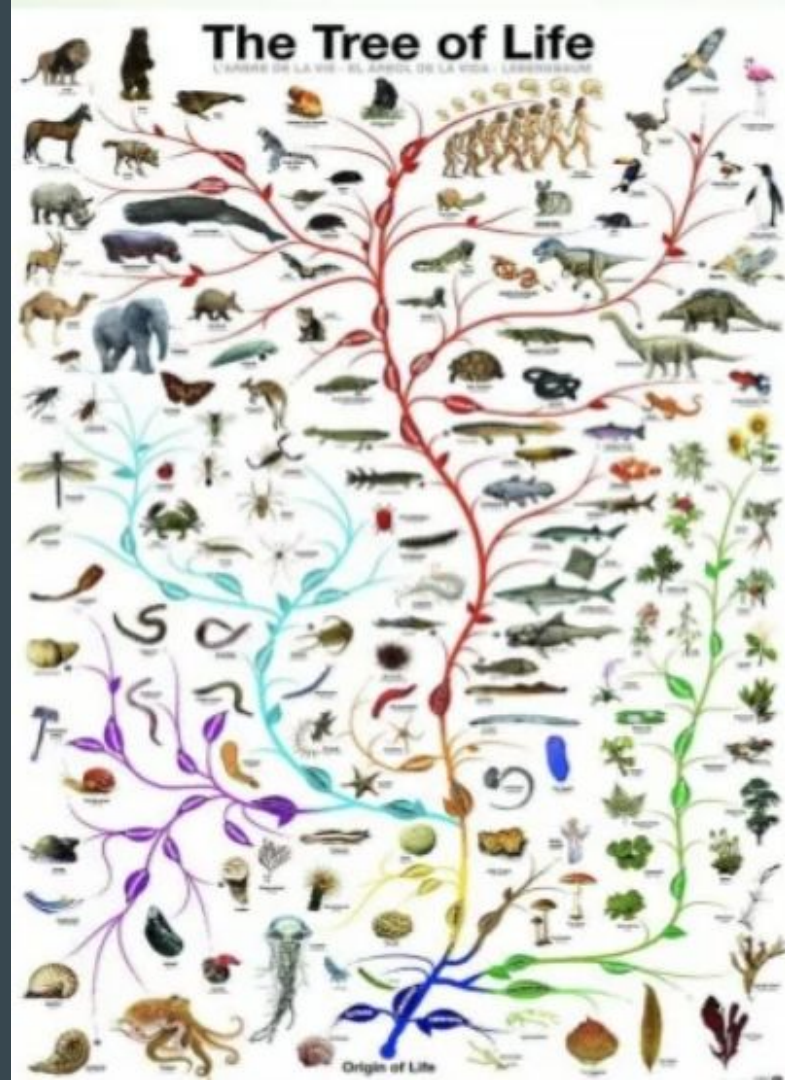
Snowmass 2021 Community Summer Study, August 18, 2022

* Title from Barzi, Gates, and Springer arXiv:2203.10393, Spring '22 APS CSWP & COM Gazette

Diversity: Necessity to Achieve
Highest Level of Excellence

Biological Evolution
driven by diversity

S.James Gates, “Thoughts on Creativity, Diversity and
Innovation in Science & Education” (1995)



Diversity: Necessity to Achieve Highest Level of Excellence

Diversity engenders Creativity:

Cross conversation between
African Musics & European
Musics ⇔ Birth of Jazz
Musics

S.James Gates, “Thoughts on Creativity, Diversity and
Innovation in Science & Education” (1995)



Diversity: Necessity to Achieve Highest Level of Excellence

Diversity and a favorable institutional climate impact faculty retention (O'Meara, Louder, & Campbell, 2014)

Diverse faculty body improves the teaching and learning environment for all students (Piercy et al., 2005)

Diverse teams produce higher quality research outcomes and unique solutions to problems (Milem, 2001; National Institutes of Health [NIH], 2012)

Diversity in higher education is associated with enhanced economic growth as universities graduate a workforce that is prepared to excel in a globalized economy (Milem, 2003; Pugh, Dietz, Brief, & Wiley, 2008)

[Resources from UC Irvine, Office of Inclusive Excellence]

Snowmass 2021 DEIA: Community Contributions

32 LOI submitted; 11 White Papers received

Accessibility in High Energy Physics: Lessons from the Snowmass;

Lifestyle and personal **wellness** in particle physics research;

Climate of the Field;

Experiences of **Marginalized Communities** in HEP;

In Search of **Excellence and Equity** in Physics;

Strategies in **Education, Outreach, and Inclusion** to Enhance the U.S. Workforce;

Why should the U.S. care about high energy physics in **Africa and Latin America?**

Snowmass 2021 DEI: Community Contributions

32 LOI submitted; 11 White Papers received

Accessibility in High Energy Physics: Lessons from the Snowmass; [K.A. Assamagan, C. Bonifazi, J.S. Bonilla, P.A. Breur, M.-C. Chen, A. Roepe-Gier, Y.H. Lin, S. Meehan, M.E. Monzani, E. Novitski, G. Stark, arXiv:2203.08748]

Lifestyle and personal wellness in particle physics research; [T. Lewis, S. Simon, C. Bonifazi, S. Thais, J. S. Bonilla, K. A. Assamagan, arXiv:2203.08631]

Climate of the Field; [E. V. Hansen, E. Smith, D. Bard, M. Bellis, et al., arXiv:2204.03713]

Experiences of Marginalized Communities in HEP; [A. K Hodari, S. B. Krammes, C. Prescod-Weinstein, B. D. Nord, J. N Esquivel, K. A. Assamagan, arXiv:2203.11508, arXiv:2203.11513, arXiv:2203.11518, arXiv:2203.11523; K. A. Assamagan, O. M. Bitter, M.-C. Chen, A. Choi, J. Esquivel, K. Jepsen, T. R. Lewis, A. Muronga, F. Psihas, L. Walkowicz, Y. Zhang, arXiv:2206.01849]

In Search of Excellence and Equity in Physics; [E. Barzi, S.J. Gates, R. Springer, arXiv:2203.10393]

Strategies in Education, Outreach, and Inclusion to Enhance the U.S. Workforce; [M. Bai, W. A. Barletta, D. L. Bruhwiler, S. Chattopadhyay, Y. Hao, S. Holder, et al., arXiv:2203.08919]

Why should the U.S. care about high energy physics in Africa and Latin America? [K. A. Assamagan, C. Bonifazi, J. S. Bonilla, C. David, et al., arXiv:2203.10060]

Meritocracy vs Inclusive Excellence

Meritocracy: a system where people's capacity (intellectual aptitudes and qualities of character) and desire to learn and work in the academy are the only considerations in assessing the quality of, or merit in their past accomplishments and their future potential for excellence.

Pure Meritocracy: an equal chance for everyone to advance and obtain rewards based on their individual merits and efforts, regardless of their gender, race, class, or other non-merit factors.

Paradox of Meritocracy

Does Pure Meritocracy Exist?

“Unearned privilege” get ignored in how we evaluate and reward achievements

“Success fueling success” → exacerbate inequalities

Underrepresentation of certain groups ⇔ limited intellectual excellence

Castilla and Bernard (2010)

“... an increased focus on meritocracy in society has led to the justification of rewards based on merit thereby turned a blind eye to discrimination or privilege at work.”

Fostering Inclusive Excellence

Awareness of privilege, consequences of continuing status quo

Turning Awareness into change

Metrics to evaluate true merits vs unearned merits

Culture Change, Structure Support, Accountability

Unique role of particle physicists:

Research, education, engagement as vehicles for DEIA

In turn, DEIA leads to excellence in Research and Education

Only sustaining, sincere efforts can lead to meaningful changes

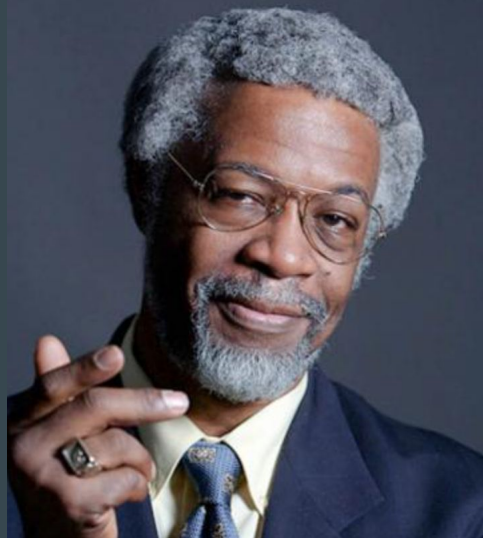
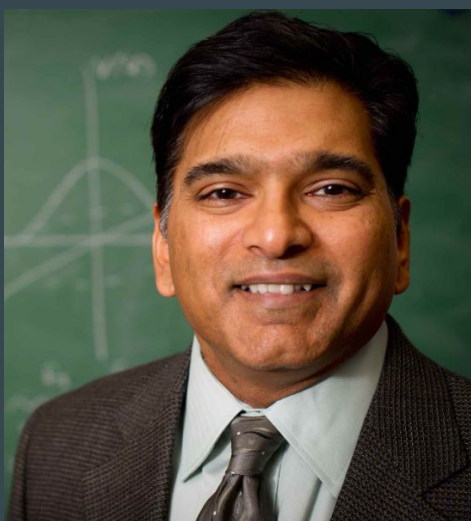
Benefit all in the community

Diversity in Education Setting:

“..... **the broadest possible manifestation of diversity is a critical force-multiplier** to the learning process for all students in a science classroom or laboratory. Diversity, with its inherent differences in background, experience and intellectual aesthetics (or style), seems to lead to the broadest spectrum of questions about any posed problem. Although there may be one answer to a physics, chemistry or mathematics problem (based on the current state of knowledge), there are often multiple paths for arriving at that answer. **In a broadly diverse classroom, all students thus benefit from hearing the different questions posed in the educational arena. Fostering habits of seeking multiple pathways to solutions would seem a prudent strategy for the development of innovation in the thinking of students in addition to enhancing each student’s mastery of existing science.**”

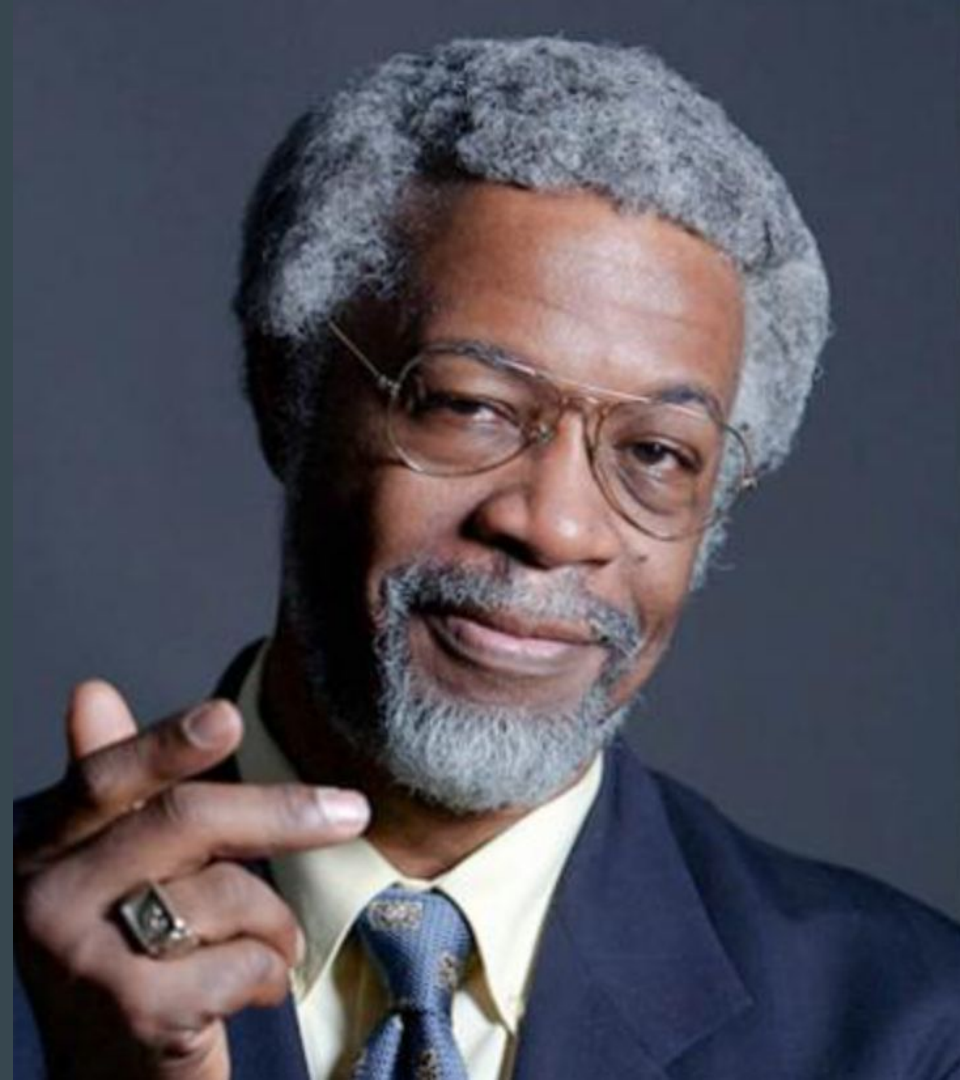
S.James Gates, “Thoughts on Creativity, Diversity and Innovation in Science & Education” (1995)

Panelists



Prof. Sylvester James Gates, Jr.

Past APS President; Director, Brown Theoretical Physics Center; Ford Foundation Professor, Brown University; Member, National Academy of Sciences; National Medal of Science; Obama's Council of Advisors on Science and Technology; Fundamental Contributions to Supersymmetry & Supergravity



Prof. Julie Posselt

Associate Dean, Graduate School,
Associate Professor of Higher Education,
Southern California University
Director, Inclusive Graduate Education
Network (IGEN) - APS Bridge Program
and Cal-Bridge Program; Research in
Inclusive Graduate Education; “Graduate
Admissions: Merit, Diversity, and Faculty
Gatekeeping (2016, Harvard University
Press)”



Prof. Haiyan Gao

Associate Director, Nuclear and Particle Physics, Brookhaven National Lab; Distinguished Professor of Physics, Duke University; Vice Chancellor for Academic Affairs, Duke Kunshan University; APS Fellow; Extensive contributions to quark/hadron transition and determinations of nucleon form factors.



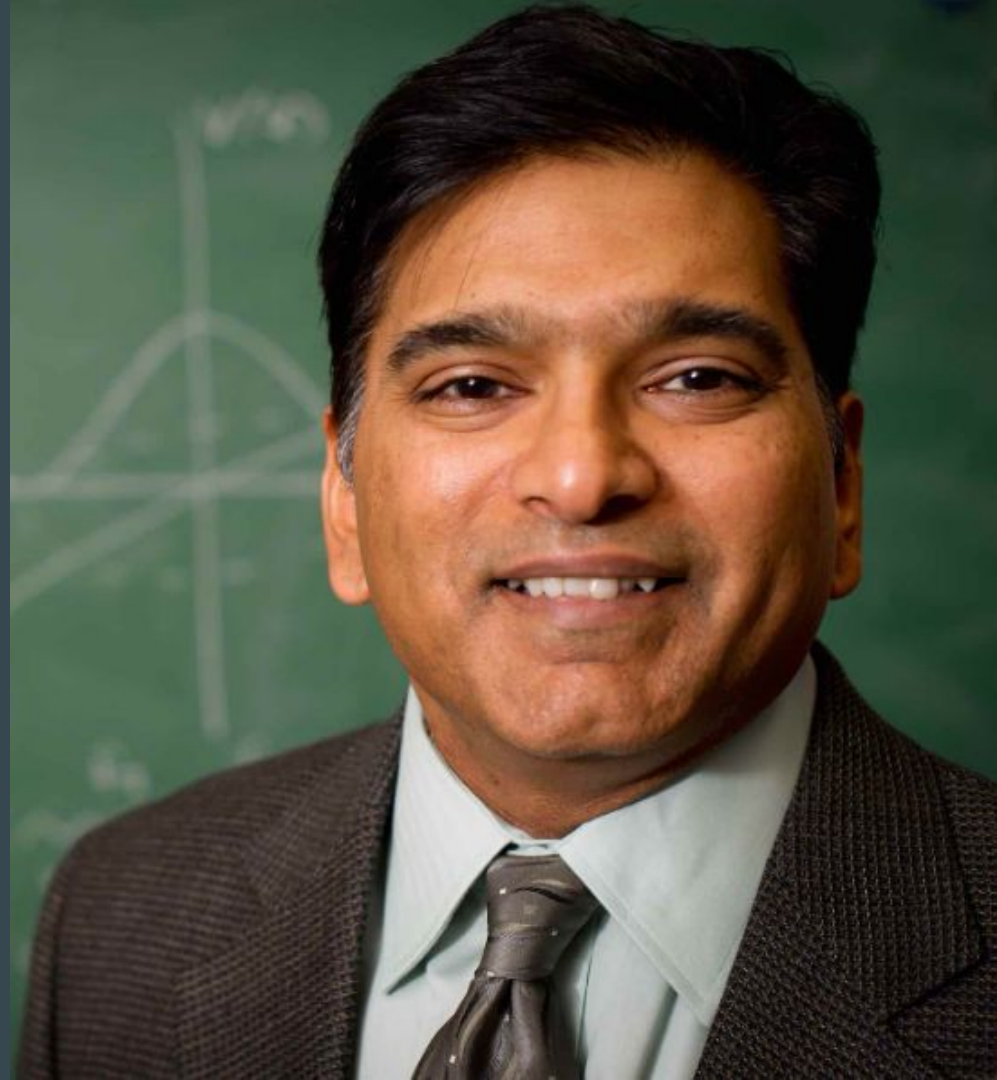
Prof. Kevin Black

CMS Collaboration; Associate Chair for Graduate Studies, Professor of Physics, UW Madison; LHC Physics Center (LPC) Co-Coordinator; CMS Diversity and Inclusion Committee; US CMS Constitution Committee; Elected US LHC Users Organization Executive Committee; New Particles/Interaction Searches, Top, Higgs Physics



Prof. Sekhar Chivukula

Chair-Elect, DPF; Distinguished Professor of Physics, UC San Diego; Formerly Associate Provost for Undergraduate Education and Dean of Undergraduate Studies, Michigan State U; Served on HEPAP; Fellow of APS & AAAS; Theory for BSM & EWSB



The Plan

Panel Discussions (panelists' perspectives, audience questions/comments)

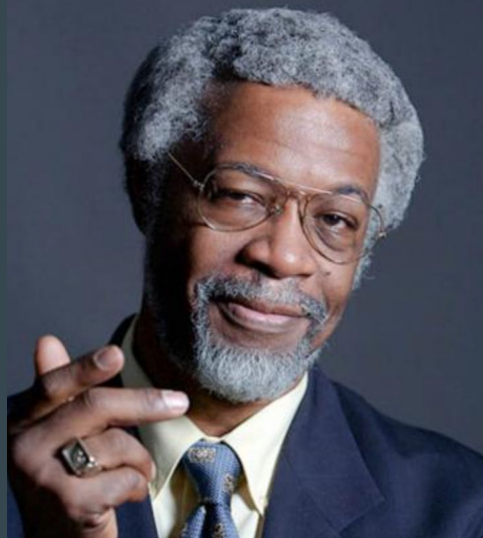
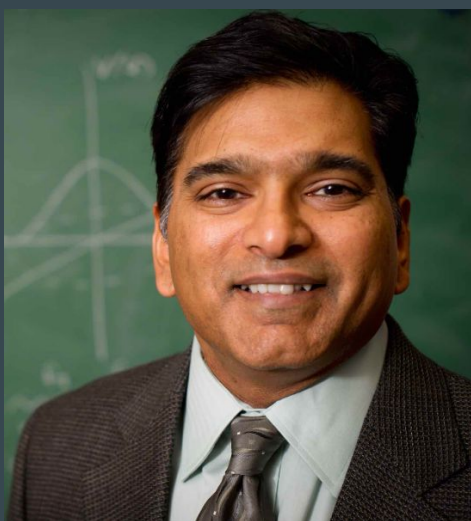
Meritocracy vs Inclusive Excellence (20min)

Challenges faced in efforts to improve DEI (20min)

Create Opportunities, Sense of Belonging (20min)

Q&A (20min)

Panelists



DEI Related Sessions

- July 19, 2:00-3:30** Plenary Session, “Careers and Training the next Generation”
- July 24, 12:30-1:45** BOF: Mental Health, Invisible Disabilities, and Neurodiversity (EC)
- July 24, 12:30-2:00** “Communicating HEP to the public and the government”
- July 25 & 26** Frontier Summaries

CEF Events:

- July 18, 8:00-12:00** Parallel Session. CEF + representatives of other frontiers
- July 19, 8:00-12:00** Parallel Session. CEF topical group discussions; internal feedback
- July 19, 5:30-7:00** CEF Plenary Session. A slice through CEF recommendations; discussion of implementation & low participation in CEF activities
- July 24, 3:30-5:00** CEF half plenary, “Communicating science to everyone”