Session J20 COM CSWP: Invited Session: STEM Outreach to Underrepresented Communities

2:30PM L20.00001 LIGO: Impacting science education through gravity-wave research in the local community and beyond

STEPHEN MCGUIRE, Southern University and A&M College — We describe our integration of the science teacher pre-service and in-service education programs at Southern University (SUBR) with the Laser Interferometer Gravitational-wave Observatory (LIGO) Science Education Center (SEC). Inquiry-based interactive exhibits are employed wherein we emphasize classical physics concepts of oscillations, waves, wave propagation, interference, resonance, lasers, and Newtonian gravity. An aggressive museum docent training program is providing a means for undergraduates to learn how to effectively communicate science concepts within informal learning environments. This local educational partnership will ultimately create a science education continuum of engagement, working at multiple levels and multiple audiences to strengthen science literacy within the targeted STEM African-American community. Following a brief overview of our program of LIGO-related optical materials research, we give a detailed presentation of our K-12 science teacher preparation program with results.

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3:06PM L20.00002 STEM Outreach to the African Canadian Community - The Imhotep Legacy Academy
KEVIN HEWITT, Dalhousie University — Like the African American community in the US, the African Canadian community is underrepresented in the Science Technology Engineering and Mathematics (STEM) fields. To serve these communities two outreach organizations emerged in Canadian cities where there is a critical mass of learners of African Descent: Toronto and Halifax. I will describe the Imhotep's Legacy Academy, which began in the Physics labs of Dalhousie University in Halifax, Nova Scotia and has grown to a province-wide program serving three-quarters of the school boards in the province with an annual budget that has grown to $400,000 in 2011-12. It follows the learner from the time they enter grade 7 to the time they graduate from university, through three programs: (a) Weekly After-School science enrichment for junior high learners, (b) Virtual High school tutoring program and (c) Summer student internships and research scholarships for post-secondary students. This year, the program was the beneficiary of funding from TD Bank to establish scholarships for program participants to enter Dalhousie university. Modeled on the Meyerhoff scholarships the program participants are identified at an early stage and are promised a subset of funding as they meet selected criteria during participation in the program. The program enjoys support from the Department of Education and the highest levels of government. A tri-mentoring system exists where faculty of African descent train mentors, who are science students of African descent at associated universities, to deliver hands-on enrichment activities to learners of African Descent. Evidence supporting the success of the program will be highlighted. Project outcomes measured include (i) recruitment; (ii) attendance; (iii) stakeholder relationships; (iv) programming; (v) staff training; (vi) perception of ILASP’s value; (vii) academic performance. The end results are new lessons and best practices that are incorporated into a strategic plan for the new project year. Teachers perceived that ILASP had a positive ripple effect on the entire academic and non-academic educational experience of the learners, crediting the project with (i) encouraging self-learning; (ii) assisting in honing learners’ science and math skills; (iii) developing core skills that were applicable in learners’ schoolwork; (iv) boosting learners’ self-esteem; (v) improving school attendance; (vi) boosting learners’ motivation to be engaged participants in all other classes.

3:42PM L20.00003 Knowing your Hispanic community to improve outreach effectiveness
CRISTINA TORRES, LIGO Livingston Observatory — “Know your audience,” wise words for properly conveying information. For outreach, this can make the difference between successful connection or failure to connect to the community around us. When the target audience is the Hispanic community knowing your audience can potentially take on unexpected complexity. Like some other minority communities, the Hispanic community’s culture is complex dual culture system. I will discuss my own personal observations about how this community interacts with the academic world. I also will discuss how the Hispanic community perceives itself as a member of the broader community we all live in and how non-homogeneous, our broadly defined Hispanic community really is. Discussing the Hispanic community’s hidden nuances will bring to light the difficulty in getting to “know your audience,” when it comes to effective outreach in the rapidly growing Hispanic community.

4:18PM L20.00004 Outreach to the Native American community through the Navajo-Hopi program
KEVIN SCHINDLER, Lowell Observatory — No abstract available.

4:54PM L20.00005 Intersections of Gender and Power: Improving the Status of Women in Physics
SAEQA VRTILEK, Harvard-Smithsonian Center for Astrophysics — Numerous problems bedevil the twin goals of increasing the numerical participation in science, technology, engineering, and mathematics (STEM) fields by women and increasing the quality of that participation. The nature of the difficulties is everywhere slightly different, but there are underlying commonalities. A wide portfolio of lessons learned that can be applied to the confluence of cultures, backgrounds, and experiences that shape any given institution have been developed and will be presented. Among these, common and dominant themes are the need for mentoring, management training, and the increased visibility of successful women scientists. These have been identified (Nelson and Rogers 2004; Sonnert and Holton 1995a; Vetter 1996) as some of the key factors in securing the encouragement and increased stability needed for more senior women scientists to thrive to their full potential and provide the example and mentoring needed for a larger and more productive new generation.