

MAR16-2015-000357

Abstract for an Invited Paper
for the MAR16 Meeting of
the American Physical Society

Excellence and Diversity in Physics, and the Quest for Other Worlds

KEIVAN STASSUN, Vanderbilt Univ

A major concern for American competitiveness today is the full engagement of US citizens in the STEM enterprise. Of particular concern is the ongoing under-representation of African Americans, Hispanic Americans, and Native Americans, who comprise 35% of the US college-age population but only 2% of physical science PhDs awarded in the US. Since 2004, with initial funding from an NSF CAREER grant and then from a Research Corp Cottrell Scholar award, the Fisk-Vanderbilt Masters-to-PhD Bridge Program has attracted 98 students, 79 of them under-represented minorities, 50% of them women, and with a PhD retention rate of 90%. Fisk has become the top producer of Black U.S. recipients of the master's degree in physics, and Vanderbilt has become the top research university to award the PhD to under-represented minorities in physics, astronomy, and materials science. Among the many "firsts" of the program are: the first member of the Sioux Nation to earn an advanced physics degree, the first Native Hawaiian woman to receive the prestigious NSF Graduate Research Fellowship, the first African American to receive NASA's top Hubble Postdoctoral Fellowship, and the first African American woman to publish an astronomy paper as first author in the prestigious journal Nature. Indeed, this latter example represents the groundbreaking discovery that the sizes and ages of stars—and therefore the sizes and ages and compositions of the planets that orbit those stars—can be measured directly and accurately via the "flicker" of the stars' light. This discovery has transformed the ability of astronomers to understand the physical nature of the exoplanets that are now being found by the thousands around distant stars.