

## POCA Outcomes 2008 – 2015

This award, entitled “A Partnership in Observational and Computational Astronomy (POCA)”, made possible collaborative research and educational activities among South Carolina State University (SCSU, a Historically Black College/University (HBCU)), the National Optical Astronomy Observatory (NOAO) and Clemson University (CU). The mission of POCA was to develop an effective, long-term partnership that combined the strengths of the three institutions to increase the scientific and educational output of all the partners with special emphasis on enhancing diversity in the field of astronomy. That mission has been accomplished over the past 7.5 years and the three institutions continue to collaborate with each other even though the initial award has ended.

The Broader Impact of this project was to increase diversity in the field of astronomy by (1) strengthening the educational and research program in physics and astronomy at an HBCU, specifically SCSU; and (2) increasing the number of individuals from underrepresented groups that engage in astronomical activities and earned degrees in astronomy and related fields.

Item 1 was achieved by involving the three physics faculty members at SCSU in a variety of activities with scientists at the partner institutions including authorship of peer reviewed publications, training and use of ground-based telescopes at Kitt Peak National Observatory and successfully competing to obtain observing time on NASA’s space-based observatory Kepler. Additionally, the SCSU faculty members and their students in collaboration with scientists at NOAO, CU and other institutions gave presentations at national conferences and created educational products such as laboratory and web-based activities.

The success of Item 2 above was through supporting students in programs at SCSU, CU and other institutions. The POCA project assisted individuals with the completion of 2 Ph.D. degrees with 2 more currently in progress, the completion of 5 M.S. degrees with 3 more currently in progress and the completion of 19 B.S. degrees while 8 more are currently in progress. Almost all of these individuals were from groups that have historically been underrepresented in astronomy and physics including African-Americans, Hispanics, Caucasian females and students with disabilities.

The Intellectual Merit of the work from this project included publications that helped develop a better understanding of magnetic fields in galaxies at radio frequencies, pulsating stars known as Semiregular red giants that are near the end of their life and other types of peculiar stars that display highly unusual chemical and physical properties including R Coronae Borealis, XX Ophiuchus and novae. The development and distribution of inquiry-based, laboratory exercises and web-based activities has helped numerous students and teachers better understand the field of cosmology. These activities in education, research and outreach continue among the participants and will further advance the field and the public perception of these topics past the end point of this award.