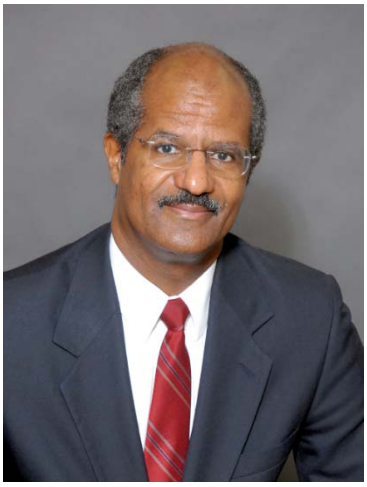
Stephen C. McGuire, PhD



Stephen C. McGuire

A native of New Orleans, LA, Dr. Stephen C. McGuire is the James and Ruth Smith Endowed Professor of Physics at Southern University and A&M College and serves as the Southern University Principal Investigator to the LIGO **(L**aser **I**nterferometer **G**ravitational-wave **O**bservatory) Scientific Collaboration.

McGuire graduated Valedictorian from Joseph S. Clark High School in New Orleans, LA, received his B.S. in Physics magna cum laude from Southern University and A&M College with a minor in mathematics, and earned his M.S. in nuclear physics from the University of Rochester and Ph.D. in nuclear science from Cornell University. As an undergraduate, he was supported by a Southern University Presidential Academic Scholarship and a one-year Crown Zellerbach Foundation Fellowship for study in the department of physics at the University of California, Los Angeles. His graduate research at both Rochester and Cornell was supported by the National Science Foundation (NSF). As a graduate student at Cornell University, he was supported also in part by a John McMullen Graduate Fellowship in Nuclear Science. At Rochester he performed nuclear spectroscopy measurements on medium mass nuclides such as ^{36}Ar and ^{58}Ni using alpha particle direct transfer reactions. This work was done at the university's Nuclear Structure Research Laboratory (NSRL) under the direction of Professor Harry W. Fulbright. At Cornell, he conducted studies of high spin states in ^{236}U using neutron capture at the Ward Laboratory for Nuclear Engineering under the direction of Professor David D. Clark.

Upon completing his PhD from Cornell, he joined the Department of Energy's (DOE) Oak Ridge National Laboratory (ORNL) in Oak Ridge, Tennessee where he worked on the production and recovery of transplutonium elements in the High Flux Isotope Reactor (HFIR). While at ORNL, he also developed national strategies for the transportation and long-term storage of high-level nuclear waste. He subsequently joined the faculty of Alabama A&M University in Huntsville, AL. There he collaborated with the US National Aeronautics and Space Administration's (NASA)-sponsored **J**apanese-**A**merican **C**ollaborative **E**mulsion **E**xperiment (JACEE) through the Marshal Space Flight Center (MSFC). In 1988 was he was honored by NASA's Office of Technology Utilization for "the creative development of a technical innovation," a result of his research on the interactions of high energy charged-particle cosmic rays in hybrid emulsion detectors. Portions of this work were presented at the *First Edward Bouchet Abdus Salam*

Institute (EBASI) meeting held at the International Center for Theoretical Physics (ICTP) in Trieste, Italy, June 1988. At that time, Dr. McGuire was the President of the National Society of Black Physicists (NSBP) and served on the Advisory Committee of this historic conference of African-American and African Physicists. Since then he has been a participant in EBASI conferences held in Ghana, Botswana, and Benin. While at Alabama A&M, he also was a consultant to the National Institutes of Health (NIH) and the US Department of Energy (DOE). Further, he spent summers as a researcher at the Lawrence Livermore National Laboratory (LLNL). In 1989, he was appointed to the graduate faculty of the endowed College of Engineering at Cornell University and began work on the uses of nuclear methods to study the detailed composition and structural features of semiconductor and optical materials. In 1992, he was named a Charter Fellow of the NSBP. In March of 1998, he was the guest of the US President and Mrs. Clinton on the occasion of the *White House Millennium Lecture* by Stephen Hawking. In the same year, he was also appointed a visiting scientist at the Center for Neutron Research at the National Institute Standards and Technology (NIST) in Gaithersburg, Maryland.

From 1999 to 2008, Dr. McGuire chaired the department of physics at Southern University and A&M College in Baton Rouge, LA. His research at Southern focuses on properties of optical materials and has led to collaborative activities with the Stanford Synchrotron Radiation laboratory (SSRL), NIST, and the Louisiana State University (LSU) Center for Advanced Microstructure and Devices (CAMD). These efforts support the Laser Interferometer Gravitational-wave Observatory (LIGO) through its Optics and Coatings Working Groups. In the spring of 2008 he lectured in the National Institute of Standards and Technology (NIST) Colloquium Series on the subject of "LIGO: At the forefront of optical materials research." At that point in its history the NIST Colloquium included 21 Nobel laureates. In 2008, McGuire was elected a Fellow of the American Physical Society. His service to the APS has included chairing its Committee on Minorities in Physics and having membership on the APS Bridge Program advisory board. In 2014 his oral history interview was made part of the inaugural HistoryMakers® collection within the United States Library of Congress. In 2015, he was appointed an inaugural LIGO Scientific Collaboration (LSC) Fellow. In 2016, he shared in the Special Breakthrough Prize in Fundamental Physics and the Gruber Cosmology Award with the LIGO Team. Also, that year he was honored with the Southern University Phi Delta Kappa Chapter "Outstanding Scientist in Education" Award, the Baton Rouge Chapter of the LINKS, Inc., "2016 Louisiana Role Model Award", the 2016 "Male Faculty Member of the Year" *HBCU Digest* Award, and shared the "2016 Best Research Center" *HBCU Digest* Award with the SUBR-LIGO Educational Partnership Team. Also, as a member of the LIGO Team he received the 2016 National Space Club - Huntsville Chapter (NSC-HSV) "Distinguished Science Award" and the 2017 Royal Astronomical Society (RAS) "Group Achievement Award (A)". In 2017, LIGO founders Rainer Weiss, Barry C. Barish, and Kip S. Thorne received the Nobel Prize in physics "for decisive contributions to the LIGO detector and the observation of gravitational waves".

Dr. McGuire has authored or co-authored well over a hundred refereed publications on nuclear physics and its applications in archival journals. In particular, he is a co-author on the publications reporting the first six direct detections of gravitational waves by both of the twin LIGO detectors located in Livingston, Louisiana, and Hanford, Washington in the journal, *Physical Review Letters*. Dr. McGuire has served as the Southern University principal

investigator for the LIGO Scientific Collaboration (LSC) since 2000 contributing to the development of low noise optical substrates and coatings, and science education outreach. Over his more than 40-year career, he has mentored numerous undergraduate and graduate students of STEM (**S**cience, **T**echnology, **E**ngineering, and **M**athematics) disciplines who have gone on to outstanding careers in their chosen STEM subfields. On campus, he directs the Southern University - LIGO Advanced Optical Materials Laboratory located in James Hall. His research has been supported by NASA, DOE, and the NSF.

Dr. McGuire is married to Dr. Saundra Y. McGuire and they are the parents of Carla M. Davis, MD, of Houston, TX, Mezzo Soprano Stephanie N. McGuire, PhD, of Berlin, Germany, and are the grandparents of Joshua, Ruth, Daniel, and Joseph Davis.

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