

## MEDICAL PHYSICS



### Mark C. Harvey

B.S. Physics – Virginia State University, 1992

M.S. Physics – Hampton University, 1995

Ph.D. Physics – Hampton University, 2001

#### Selected Papers

“Predicted risks of second malignant neoplasm incidence and mortality due to secondary neutrons in a girl and boy receiving proton craniospinal irradiation,” Taddei, P. J., Mahajan, A., Mirkovic, D., Zhang, R., Geibeler, A., Kornguth, D., Harvey, M., Woo, S., Newhauser, W.D., *Phys. Med. Biol.* **55** 7067 (2010)

“Feasibility Studies of a Passive Scatter Proton Therapy Nozzle without a Range Modulator Wheel,” Harvey, M. C., Polf, J. C., Smith, A. R., Mohan, R., *Med. Phys.*, **35**, (2008)

“Initial Beam Size Study for Passive Scatter Proton Therapy – Part I: Monte Carlo Verification,” Polf, J. C., Harvey, M. C., Titt, U., Newhauser, W. D. and Smith, A. R., *Med. Phys.*, **34**, (2007) .

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Dr. Mark Harvey has a background in both fundamental and applied nuclear physics. He has worked on national and international experiments in fundamental, medium and high-energy nuclear physics at laboratory facilities such as the National Institute for Nuclear and High Energy Physics (Amsterdam, The Netherlands), Thomas Jefferson National Laboratory (Newport News, VA), and Brookhaven National Laboratory (Upton, NY). A primary objective of these experiments is the study of the underlying physics mechanisms that govern the basic constituents of the atomic nucleus, that is, at the quark and gluon level. Dr. Harvey's current interest in applied nuclear physics encompasses the fields of medical physics and health physics, respectively. In short, medical physics involves the use of radiation to diagnosis and treat cancer patients. On the other hand, health physics involves the protection of people and the environment from the hazards of radiation, while ensuring the beneficial usages of radioactive materials and radiation. In medical physics, Dr. Harvey has used Monte Carlo, computer simulation techniques to carry out research on proton radiotherapy at the University of Texas M. D. Anderson Cancer Center (Houston, TX). A major impetus of this work was to model both the therapeutic absorbed dose and secondary neutrons from the passive scattering treatment nozzle at the Proton Therapy Center. Dr. Harvey currently serves as the coordinator and main instructor of the health physics program at Texas Southern University (TSU). It is important to note that the Department of Physics at TSU received funding from the Nuclear Regulatory Commission (NRC) to start a health physics program. The program began in the fall of 2008 and is the only health physics program in the Greater Houston area. A specialized physics program of this type at the baccalaureate level is unique, particularly at an HBCU. The curriculum is designed to cover the basics of radiation physics theory and experimental measurement. Dr. Harvey mentors students on career choices as well as several research projects including radiation dosimetry and shielding.