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Medical Physics Graduate Program At An HBCU

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The Physics Department at Hampton University houses the first Medical Physics graduate program at a minority institution, and the first in the state of Virginia. Jointly established with the Eastern Virginia Medical School, the program requires students to take standard physics courses in addition to medical physics classes and clinical rotations performed at local hospitals. The associated medical physics research primarily focuses on detectors development for absolute 3D dose distribution measurements (with accuracy better than ± 100 microns), characterization of the uniformity or non-uniformity of Brachytherapy sources, and extraction of the 2D and 3D in-vivo dose maps for real time dose monitoring. Recent novel fundamental studies on the energy dependence of cancer cells to address, among others, mono-energetic Brachytherapy source treatments, reaction mechanisms associated with cancer cell destruction, and cancer genome identification have been launched. Each of the research conducted is strongly coupled to dedicated Geant4 Monte Carlo simulations. After presenting this unique medical physics program, we will review results obtained from its research group.