

Faculty Support for Developing Radiation Dosimetry Research in Health Physics using Monte Carlo Techniques at Texas Southern University

Executive Summary:

The Physics Department at Texas Southern University (TSU), in Houston, Texas, one of the nation's largest Historically Black Colleges and Universities, has received support under the grant number NRC-38-07-495 for developing a program in Environmental Health Physics, as well as more limited support for Faculty Development under grant NRC-38-08-973. The current program commenced in the Fall of 2008, and presently is the only Health Physics Program in the Greater Houston area. The near term plans are to expand the current curriculum by modeling the program similar to the ABET accredited program at Idaho State University where two tracks are offered (a physics intensive track, and biology intensive track). The current TSU physics intensive program grants a B.S. in honors-level health physics with special emphasis on environmental protection. In 2010, we will be graduating three seniors, with an additional seven-nine (7-9) students in the pipeline. These students are supported through an existing UT-Austin/ONR consortium that offers limited support. Expanded scholarship support will be able to address the dramatic increase in student interests in the TSU health physics program generated thus far. This will be pursued in the near future through a separate proposal to be submitted under NRC funding initiative HR-FN208-NED01. Paralleling these developments, through the present effort we seek to expand the core training of our faculty by primarily implementing a research program using Monte Carlo methods for radiation dosimetry calculations for not only impacting the quality of the curriculum, but enhancing the potential for basic and applied research in this area on the TSU campus as well. This will be in addition to environmental pollution radioactive contamination measurements and radiochemistry (mainly nuclear activation probes analysis in collaboration with UT Austin). The existing Faculty Development grant has been, essentially, exhausted (although we originally asked for approximately \$100K/3-Years, 2008-2011). We seek the additional amounts we should have originally asked for, approximately \$200K. Dr. Mark Harvey, a new faculty replacing Dr. Elena Stefanova (who will resign from TSU effective 12/31/09, and was the original beneficiary of the exiting Faculty Development grant) will be assisted in transitioning his capabilities (which are primarily high energy experimental nuclear physics and medical physics) into the Health Physics related area with emphasis on Monte Carlo simulation and Radiation Dosimetry. Consultants will assist him: Drs. Paul Gueye from Hampton University and Elena Stefanova from the Bulgarian Academy of Sciences. **Presently the program is supported by faculty members with serious scientific research backgrounds, in the areas of nuclear and medical physics. The health physics program requires initiating health physics research on campus. To that end, the immediate research goal is to develop a high-powered computing laboratory for performing dosimetry calculations using Monte Carlo techniques. We have strong computer capability built by another faculty of the physics department, Dr. Tymczak.**

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