

Harold Johns made many outstanding contributions in the field of Medical Physics. Although he is mainly known for his work in radiation therapy physics, in the last few years of his professional career his primary efforts were in research in diagnostic imaging. As with any activity in his life, he attacked these problems with great energy and enthusiasm. He was particularly concerned about the high radiation doses received by patients because of the inefficient imaging detector systems available in the early 70's, especially for mammography.

Following a sabbatical with Professor Jack Boag in England, he became interested in electronic radiography and initiated a strong effort in both the theoretical and experimental development of high pressure gas ionization chambers and liquid ionization methods for imaging. This led to application of ionization detectors for the newly-emerging modality of computed tomography for both conventional and dual energy image formation. His strong commitment to understanding the science underlying the technology with which he was working, led to investigation in his lab of the key factors determining imaging performance as well as the methods for the quantitative analysis of image quality using MTF, noise power spectra and DQE. Eventually, under his guidance and intense stimulation, research efforts in the laboratory moved toward photoelectronic and solid state detectors for application in quantitative vascular imaging, digital radiography and fluoroscopy and digital mammography. This presentation will focus on the character and influence of Harold Johns in building a strong research effort and will look at some of his contributions to digital radiography and particularly, digital mammography.

#### Educational Objectives

1. To familiarize the participant with the work of Professor Harold E. Johns in the physics of diagnostic radiology
2. To consider how strong leadership qualities and values can influence success in research
3. To review the progress of research in digital mammography initiated under the guidance of Harold Johns