THURSDAY, OCTOBER 22, 2009 - 4:00 PM - ROOM 1-425
Refreshments at 3:30pm - 2nd floor outside room 1-425

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Modern Medical X-ray Computed Tomography (CT) systems represent one of the success stories of the application of physics in medicine. Originally introduced in 1972, CT has undergone significant technological changes, especially over the past decade, that fundamentally affect the way that medicine is practiced in the United States. The introduction of slip ring technology, multiple detector row systems and fast gantry rotation times have allowed routine applications in cardiac imaging and trauma imaging that were only imagined a few short years ago. Now Multidetector row CTs (MDCTs) are commonplace not just in Radiology Departments, but in Emergency Departments, Cardiology Departments, Urology Clinics and in standalone outpatient centers.

This has resulted in increasing numbers of patients undergoing CT scans and last year the National Council on Radiation Protection (NCRP) reported that the radiation dose from CT procedures is now estimated to be responsible for 50% of the medical exposure and for 25% of the TOTAL exposure (medical plus background and natural sources) to the population of the United States.

While manufacturers continue to develop MDCT technology, they have also been developing multiple methods to reduce radiation dose. But one of the consequences of reducing radiation dose can be reduced image quality, leading to a situation where there are tradeoffs between image quality and radiation dose.

This presentation will describe some of the latest developments in MDCT technology and its application in clinical settings. It will also describe quantitative metrics of radiation dose (both good and bad metrics), image quality (again, both good and bad) and the beginnings of investigations into the tradeoffs between them.