Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Computed Tomography Measurements Using Optically Stimulated Luminescence of KBr:Eu In Real-Time. DAVID KLEIN, Dept. of Physics, Oklahoma State University, DAVID PEAKHEART, Oklahoma University Health Sciences Center, RAZVAN GAZA, X. JOHN RONG, UT MD Anderson Cancer Center, STEPHEN MCKEEVER, Dept. of Physics, Okla. State Univ. — Increasing complexity in modern scanning geometries invalidates the concept of computed tomography dose index (CTDI) for CT dosimetry. A real-time dosimetry system using optically stimulated luminescence (OSL) of KBr:Eu is evaluated in comparison with a pencil ionization chamber for CT dosimetry in this study. CT scans were measured over a relevant range of energies and tube currents using a GE LightSpeed Ultra scanner. Complete OSL signals were obtained before, during, and after the CT scans at a rate of 10Hz. Performance was determined in part by normalizing both the initial OSL intensity and the background-subtracted integral OSL to exposure reported by an ionization chamber. OSL response normalized to exposure shows good correlation with coefficients of variation of $\sim$%5 or less. Results show that this OSL dosimetry system possesses great potential for faster, higher-resolution CT characterization and may prove a valuable alternative to CTDI.

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Date submitted: 20 Nov 2006 Electronic form version 1.4