Effects of respiratory motion to dosimetry body organs with radiation external photon

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Abstract:
Rays have many application in human life, that most of them in medical aplications, Such as is used in diagnostic radiography, Hence, the radiation effect on tissue that do, dosimetry methods will be vere important. overdosing causes damage to the body, standard dose was determinad by international commission of radiological protection ICRP, so before ray radiation to body, must be examin. computerized phantoms are usful tools for dosimetry. In order for Computerized phantoms to reach their full potential as a research tool, however, it is vital for them to be as anatomically realistic as possible. Recent work in the development computerized phantoms has focused on the creation of ideal hybrid models. W. Paul Segarsis among the leaders in the development of simulation tools for medical imaging research where he has applied state-of-the-art computer graphics techniques to develop realistic anatomical and physiological models. Foremost among these are the XCAT phantom, a computational model for the human body. computational models have widespread use in imaging research to develop, evaluate, and improve imaging devices and techniques and to investigate the effects of anatomy and respiratory and cardiac motion. They also provide vital tools in radiation dosimetry to estimate patient-specific dose and radiation risk and optimize dose-reduction strategies. This paper evaluate effects of respiratory motion to dosimetry body organs with radiation external photon by used Referenc hybrid phantom. The heart, liver, lung, stomach, spleen are selected becuse they were rigidly translated with the motion of the diaphragm during breathing. The percent of dose variations into geometries AP and PA and 0.08 MeV energy were obtained by MCNPX as following: lung (1.63%AP and 3.4% PA) liver (1.46% AP and 2.35% PA) stomach (0.77% AP and 3.03% PA).

Key Words: Dosimetry, computerized phantoms, respiratory motion, MCNPX