Tomography and Comparison of Image Reconstruction Algorithms in Animal Positron Emission Tomography (Animal PET)

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Tomography and display of physiologic changes play an important role in diagnostic of cancers and study of disease mechanism. In order to achieve aim, the Animal Positron Emission Tomography (PET) system was designed and constructed. Acquired images quality from this system depends on different algorithms for image reconstruction in addition to its design and construction. In this paper, system features and tomography method are considered, firstly. Then, image reconstruction algorithms (MLEM, SART and FBP) were performed on sinogarm. Acquired images quality from these reconstructed algorithms was compared with RMS Contrast and spatial resolution factor. Also, reconstructed time and speed of process for three algorithms was considered. According to results, obtained RMS contrast and spatial resolution factor from acquired images with MLEM algorithm shows superiority of MLEM algorithm against the SART and FBP algorithms. Also, SART algorithm has better speed than FBP and MLEM in reconstructed time.