POSITRON IMAGE PROCESSING SYSTEM

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The purpose of the system are positron image data collection, image processing insertion of phisiological data and patient data, and console operation of multicrystal positron camera.

The camera detectors are one pair of multicrystal two dimensional position detectors which stand opposingly and between which patients are set. The maximum counting rate of this camera reaches about 50k per second.

The detected adress pair codes of gamma ray pairs are output as digital codes. From this adress codes we get any sectional image which are parallel with detector surfaces by linear calculations. But because dynamic image processing and multidirectional section image construction need so many images, we cannot employ a analog transformation method. The system must be able to collect a great amound of adress codes as fast and long time as possible, add timing signals and phisiological data, reconstruct collected adress codes into sectional or dynamic images and give clinically available display images by various image processing techniques.

The system consists from high speed DMA channel, detector interface, display terminal, and other peripherals. When a fast and voluminous data transfer needed, the system abilities are determined by a disc memory access time.

As the examle of positron camera images a rabbit images are displayed. In spite of a few counts (under 1.5 counts per pixel) a bllader of the rabbit can been seen clearly at focal plane 0.6.

GAMMA CAMERA USED THE SUPER RESOLUTION METHOD (3)

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The optical imaging system can not pass the spatial frequency over the maximum frequency of its system. In gammer camera there is not wide frequency band. Its image quality is bad at the resoluving power. We used the method of super resolution for the improvement of gammer camera resolution. In this study we used the method tried by Lukostz. We choised the object frequency of 1.25 lines/cm consist of ^{99m}Tc. This object was overlapped by 1.0 lines/cm lead grid. Two object (1.25 and 1.0 lines/cm) was scanned by scintiscanner used 37 holes F-10 cm collimator. In the nezt place we removed the lead grid at 2 mm and obtained second scintigram. We get 5 scintigrams successively. This 5 scintigrams was printed in one image. We could observed 1.25 lines/cm object image.