POSITRON IMAGE PROCESSING SYSTEM
Yoshio Suda, Takeshi A. Inuma, Norimasa Nohara, Takehiro Tomitani and Eiichi Tanaka
National Institute of Radiological Sciences Chiba

The purpose of the system are positron image data collection, image processing insertion of physiological 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 address pair codes of gamma ray pairs are output as digital codes. From this address codes we get any sectional image which are parallel with detector surfaces by linear calculations. But because dynamic image processing and multi-directional section image construction need so many images, we cannot employ a analog transformation method. The system must be able to collect a great amount of address codes as fast and long time as possible, add timing signals and physiological data, reconstruct collected address 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 example of positron camera images a rabbit images are displayed. In spite of a few counts (under 1.5 counts per pixel) a billader of the rabbit can been seen clearly at focal plane 0.6.

GAMMA CAMERA USED THE SUPER RESOLUTION METHOD (3)
Katsuji Niwa, Yoshiyuki Kanai, Nobumoto Yamanaka and Taiichi Kawazu
Jyosai Dental University, Dept. of Dental Radiology.

The optical imaging system can not pass the spatial frequency over the maximum frequency of its system. In gamma camera there is not wide frequency band. Its image quality is bad at the resolving power. We used the method of super resolution for the improvement of gamma camera resolution. In this study we used the method tried by Lukosz.

We choised the object frequency of 1.25 lines/cm consist of 99mTc. 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 next 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.