

In our system the scinticamera Pho-Gamma III was used as a detector, but hereafter use of the film with better resolution was studied. Also, images were reconstructed using the laser beam (He-Ne laser, 6328 Å, 1 mW). Zone plates consisted with coaxial lead rings, one was 10 open zones and another 3 open zones. In this study later was used frequently, because the resolution of the detector was not very good. Sensitivity of zone plate type collimators was compared with a pinhole collimator. This result showed that the aperture area was more several hundreds times than the pinhole, but that sensitivity proportioned

to solid angle of γ -ray source to aperture part. Therefore countrates were several ten times more.

Using Tc-99m as γ -ray source, characters H, T and X were tried and these reconstructive images were obtained. Yet, good reconstructive images do not obtained, but this method had high sensitivity and area of view was considerably wide. Also optical path in reconstructive process was shortened by using concave lens. So that it was considered that these reconstructive system might be compacted in one simple set.

The Three Dimensional Scanner Using a Coaxial Ge(Li) Detector

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A three dimensional scanner using a coaxial Ge(Li) detector is being developed. The scanner is equipped with a parallel truncated cone-type collimator or a multichannel focused collimator by which information of source depth is transformed into the radial distance of incident position of radiations on the front surface of the detector. The incident position of radiations is then located by the pulse-shape analysis of signals from the detector. The scanner can thus be used for the multiplane

tomography yielding four to six pictures at a time.

In this report will be presented: 1) selection of electronic circuits and their combination for the pulse-shape discrimination, 2) fundamental problems on collimation, 3) effects of scattered gamma-ray, 4) advantage and disadvantage of using a Ge(Li) detector for this purpose, 5) performance in the clinical applications.