

Flying-Spot Scanner with Omni-directional Scanning for Two-Dimensional Processing of Radioisotope Images II

T. TOMITANI, E. TANAKA and N. NOHARA

National Institute of Radiological Sciences, Chiba

In the 11th annual meeting of the Japanese Society of Nuclear Medicine, we proposed the principle of the two-dimensional analog R.I. image processing and a method to realize it by use of a flying spot scanner and also gave the preliminary results of the device. At that time, the functions of the device were not satisfactory in such respects as (1) non-uniformity of the flying spot system, (2) poor spatial resolution and (3) base-line shift in electronic system. The effect (1) arises partly from the dependence of optical solid angle subtended by focus lens on the position of flying spot and partly from the non-uniformity of half prism, which was used to devide the flying spot in two ways for purpose to compare two films. The latter can be avoided by abolition of the half prism. As to (2), the improvement of high frequency characteristics of the electronics made the spatial resolution satisfactory, so that the processings of the X-ray film data are now

feasible. The effect (3) can be reduced by adoption of D.C. coupling wherever possible or by the improvement of the low frequency response of the electronics, where condenser couplings are indispensable, by adoption of D.C. restorer or by increase of the time constant. As a result of these improvements, the following processings and displays operate satisfactorily; (1) blurring and deblurring, (2) density display, (3) bird's eye view, (4) shaded view and combination of these functions. In this meeting are presented the processed data obtained from the film of the liver phantom taken by scintillation camera and those from the film of X-ray exposure. There exists some trouble in metrical handling of the data such as iso-count contour map or iso-count density spectrum etc, because of base line shift and non-uniformity of the optical system, which are left for future study.

The characteristics of the converging collimator

T. TAMIYA, A. MISHIMA and T. KONDO

Radioisotope Raboratory, Nagoya University Hospital, Nagoya

F. KASAHARA

Department of Radiology, Tokoname Municipal Hospital

H. SAITO

*Radioisotope Laboratory, Nagoya University Hospital and Department
of Radiology, Nagoya*

To take a transmission scintiphoto with a gamma-ray point source and to superimpose X-photo onto scintillation image, a diverging collimator was used in inverted position, and by convincing its usefulness after several fundamental tests, we order made a 1261 hole 56 cm focces converging collimator. Its resolution, sen-

sitivity and effect to gamma-ray spectra and etc were studied in comparison with a parallel hole, pin-hole, diverging hole collimator of Phogamma/III camera. Resolution test was performed using a line source phantom. Sensitioity test was performed with a flat and round area source. The chaunge in gamma-ray spectra was