$$Cov\,(x, y)=n_B\,[p\,(x, y)\,{*}h\,(x, y)]$$

where n_B is the count density. The variance of the noise is equal to Cov (0, 0).

Assuming a constant aperture area, the signal to noise ratio in detecting a small lesion in a uniform large organ is proportional to the "figure of merit" given by:

$$F=\left[A/\int\int p(x, y)\,h(x, y)\,dxdy\right]^{1/2}$$

where A is the area of the shadow of the aperture onto the object plane. An analysis shows that no coded aperture has a larger F-value than that of the optimum pinhole for a given spatial resolution, but a suitable coded aperture would provide an image having different noise characteristics which may yield a larger F-value over a certain range of resolution than a pinhole. Such a coded aperture may be expected to be suitable for observing an image with various resolution by modifying the processing function.

Spatial Frequency Filtering of Scintigram

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The spatial filtering in scintigraphic reproduction can be performed by several methods. The basic feature of the spatial filtering studied is the coherence of He-Ne Laser. We used a pinhole for a low-pass filter. The small filtering diaphragm is placed at the fraunhofer spectrum corresponding to the scintigram.

The quality of the filtering image, particularly the sharpness, will be decreased; however if we want to lower the noise level of a scintigram, it is necessary to suppress some of the high spatial frequency components. This circular diaphragm behaves like a low-pass filter, and the cut-off frequency transmitted by the system is given by $\nu=\gamma/f\cdot\lambda$, where γ is the radius of the aperture, f is the focal length of the lens, and λ is the wave length of the radiation. The sample was used 35 mm size film printed the scintigram. The best image quality was recorded in a frequency band equal to 0–0.7 mm^{-1}. One could see a improvement in the contrast of the image and a decreace of the noise level. The noise level had been considerably lowered by the spatial filtering; and as a result of this action the resolving power seemed to be increased.

The Development of Color Data Processing System with Dividing Subtraction Method

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The color data processing system developed by us, can change the density level of scintigram to twelve colors by taking a picture of passed or reflected figure. It has a function to erase unneces-