

## XV. Apparatus

### Double Hole Honeycomb Collimator

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For the providing the honeycomb collimator with a higher sensitivity and higher resolving power than those of the usual ones, we have developed a new concept of honeycomb collimator. It is a double hole honeycomb collimator, because the modification consists of inserting a lead tube in each hole of the usual collimator, the diameter of which being  $1/3$  of the hole containing it.

By this device the penumbra gamma rays are absorbed by these lead tubes. The on-focus gamma rays will effect the reduction of the effective area to the extent of the thickness of the tube.

By increasing the diameter of the holes, it

is presumed to be possible to make a collimator which has a better resolving power, and a similar degree of sensitivity, to those of the usual 37-holes honeycomb collimator. This time a 19-double holes honeycomb collimator was prepared, and its sensitivity and resolving power were compared to usual 37-holes one by means of MTF. The cristal diameter was 3 inches.

#### Results:

Using  $^{99m}\text{Tc}$ , the value of MTF of 37-holes one and 19-double holes one at 0.6 lines/cm were 1.4 and 2.9. But on sensitivity, the sensitivity of 19-double holes one was reduced by 30% than that of usual 37-holes one.

### Variable Focus Collimator for $^{99m}\text{Tc}$

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A variable focus collimator planned for  $^{131}\text{I}$  was reported previously by Saito.

This is to report the variable focus colli-

mator produced for  $^{99m}\text{Tc}$  gamma rays. The focus is shifted by changing the gaps between five lead plates, which are supported by three