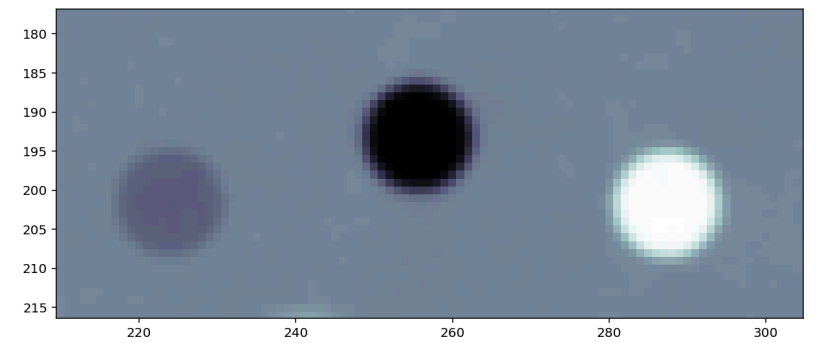
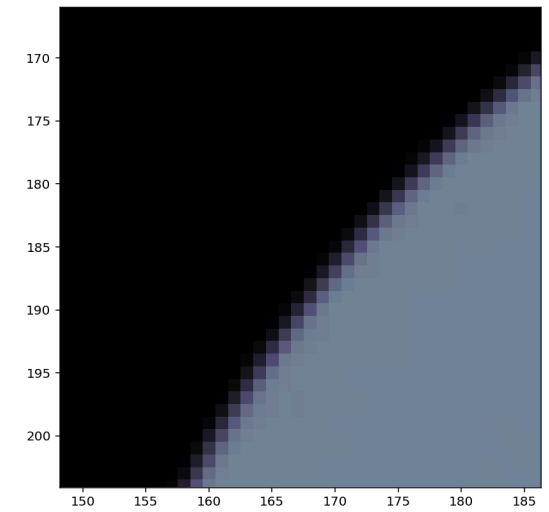
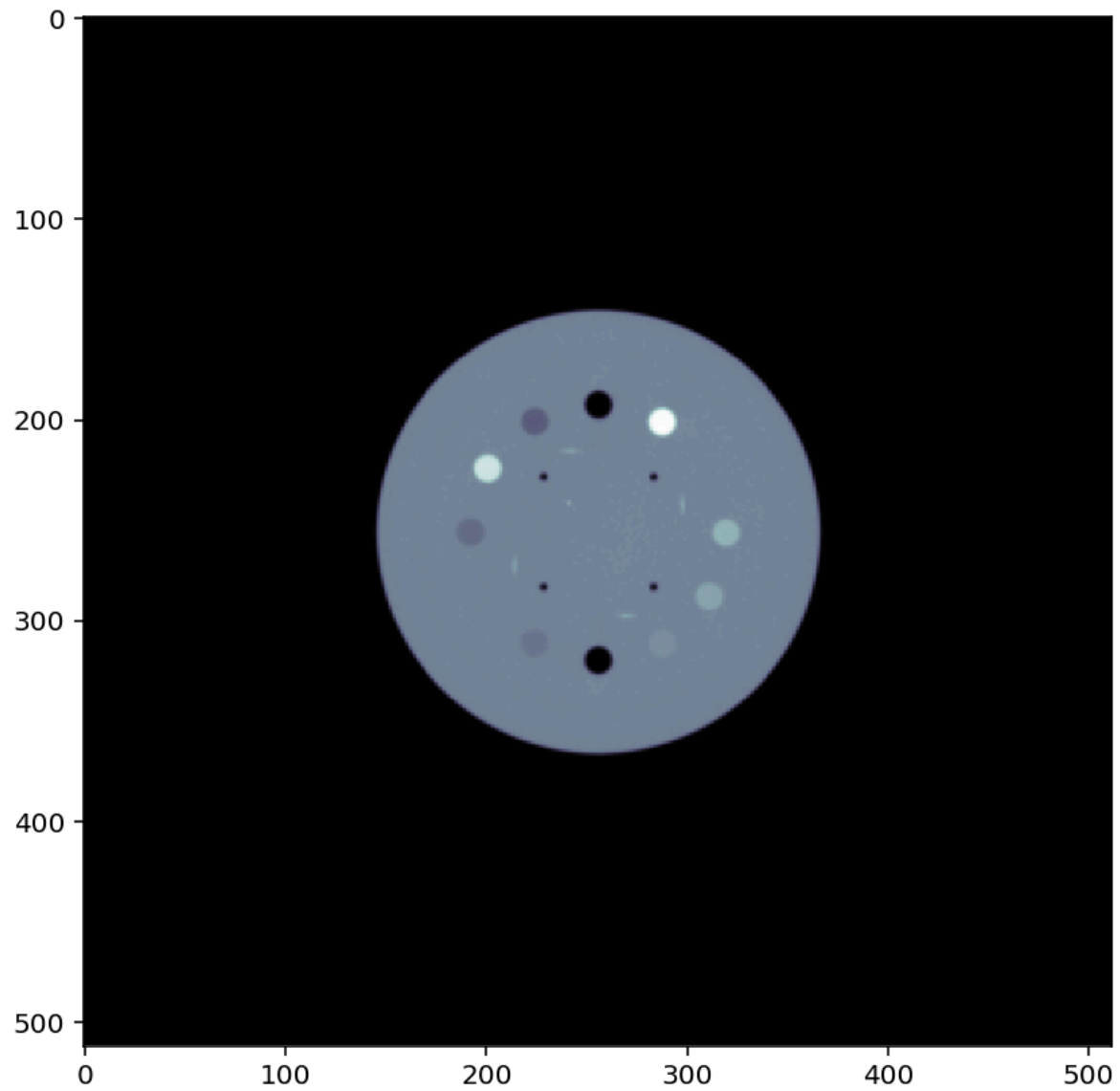
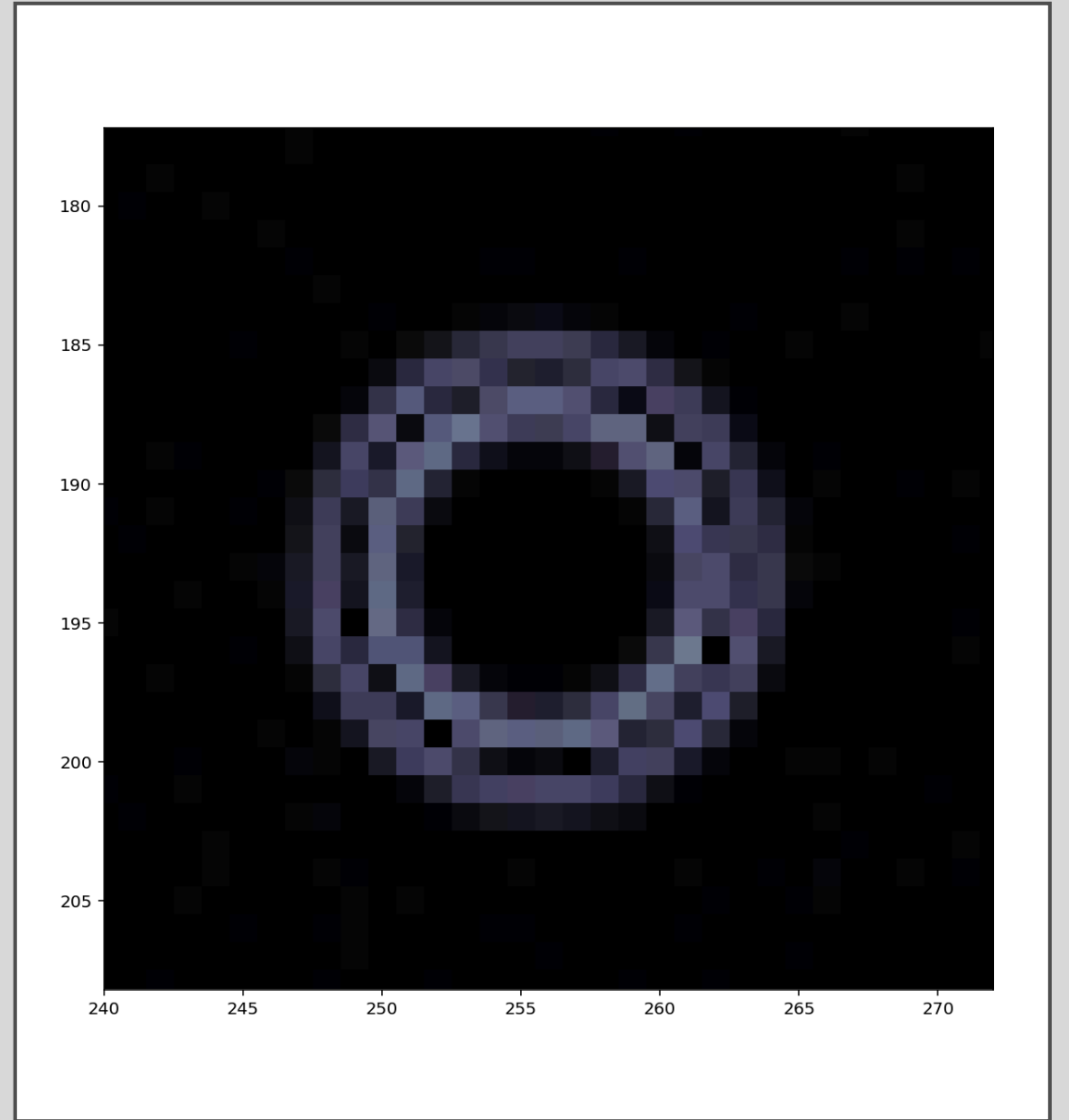
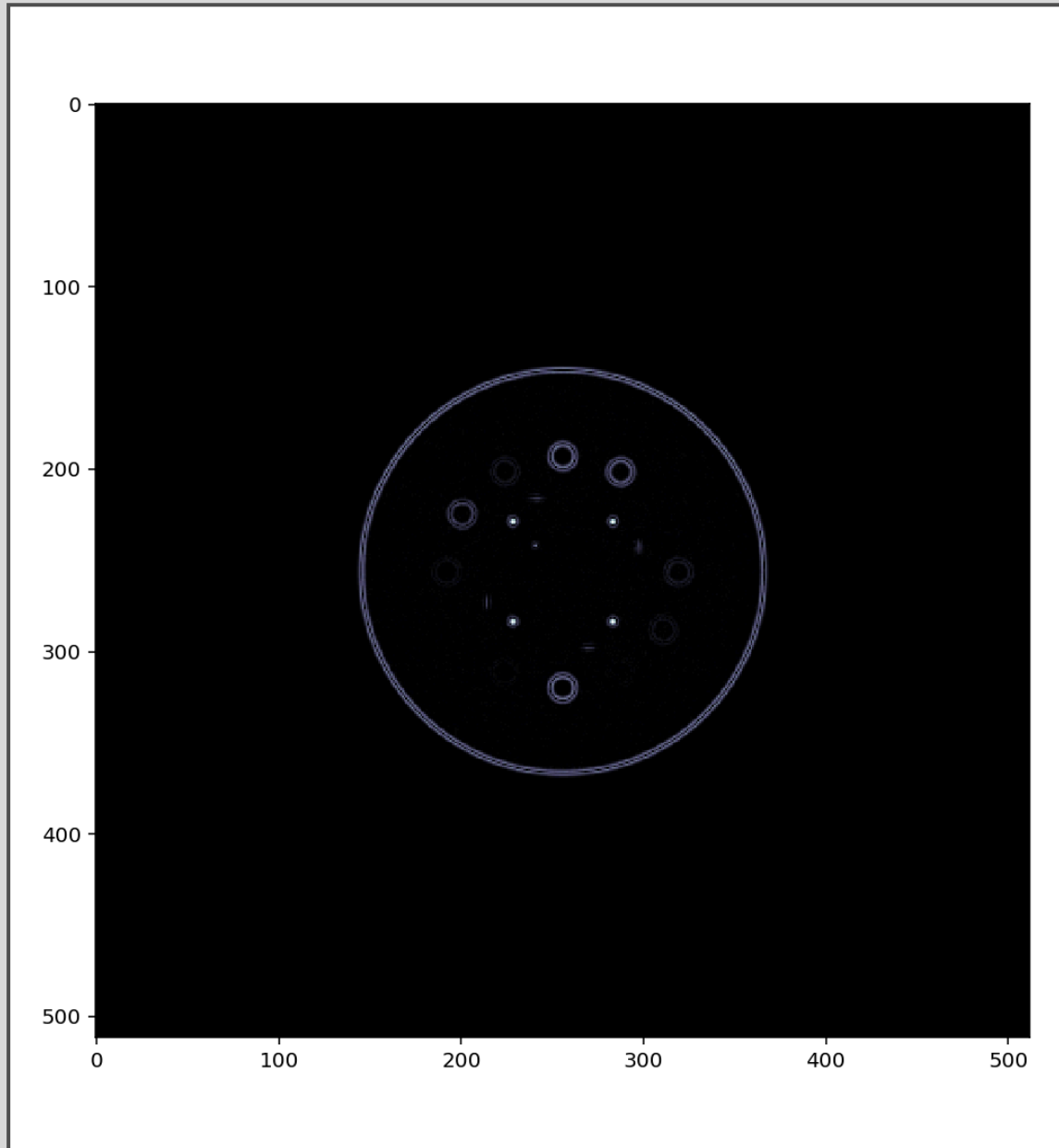


GAUSSIAN FILTER $\sigma = 0.6$



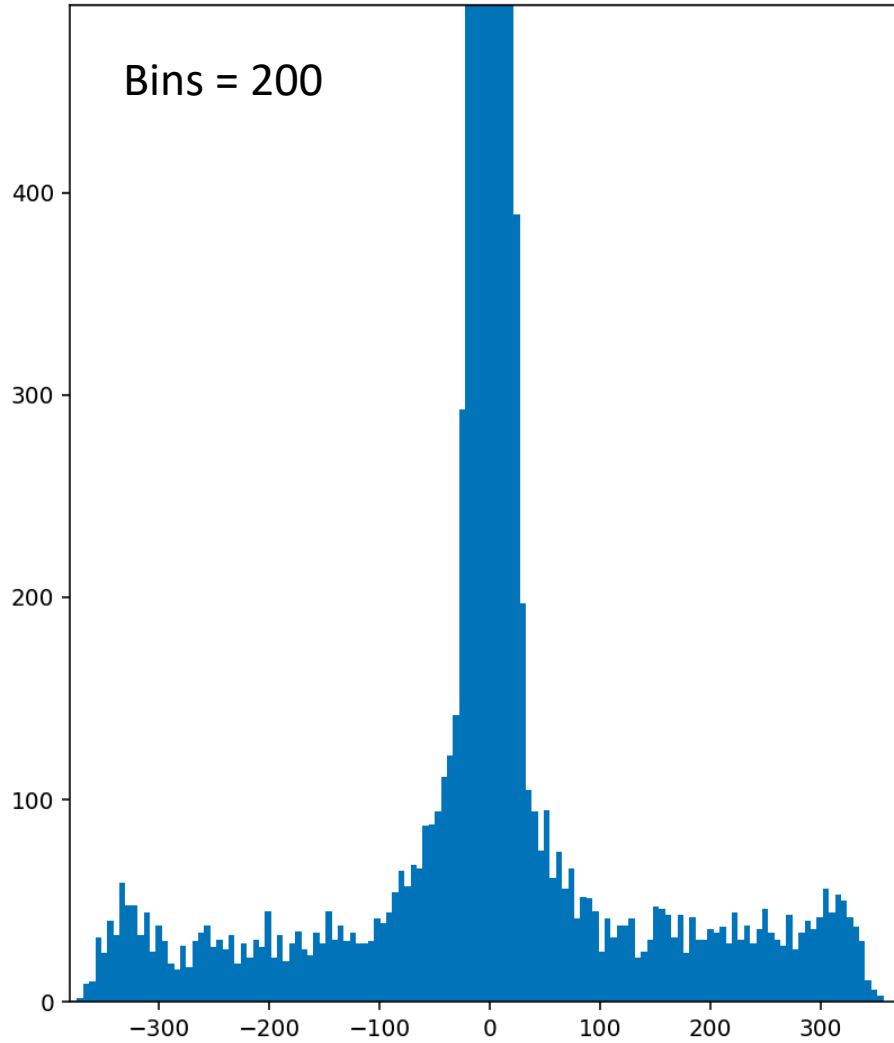
LAPLACIAN OPERATOR: FINITE DIFFERENCE METHOD



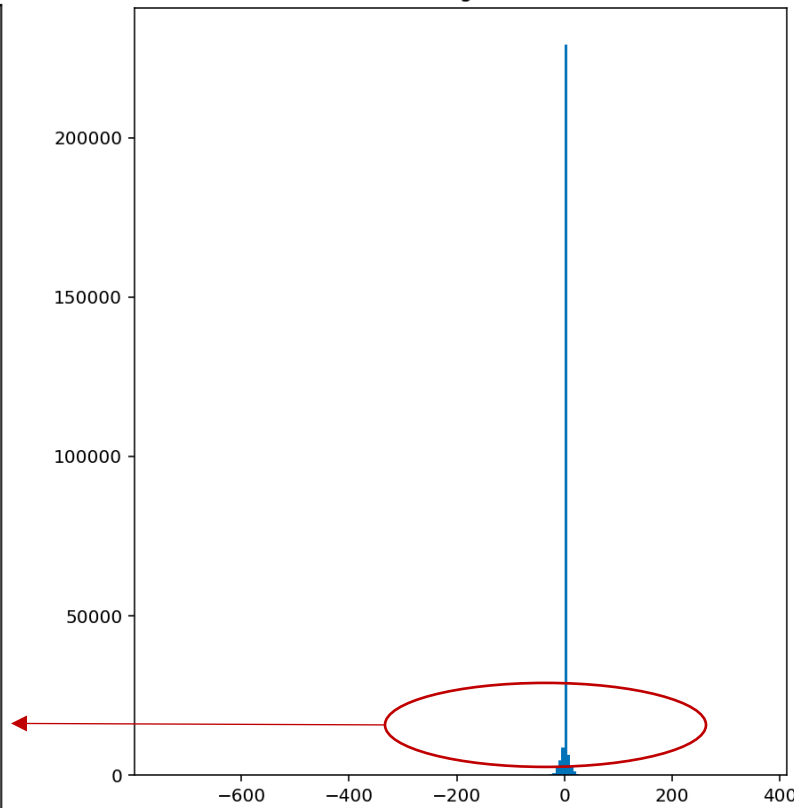
THRESHOLDING BY HISTOGRAM

Histogram

Bins = 200

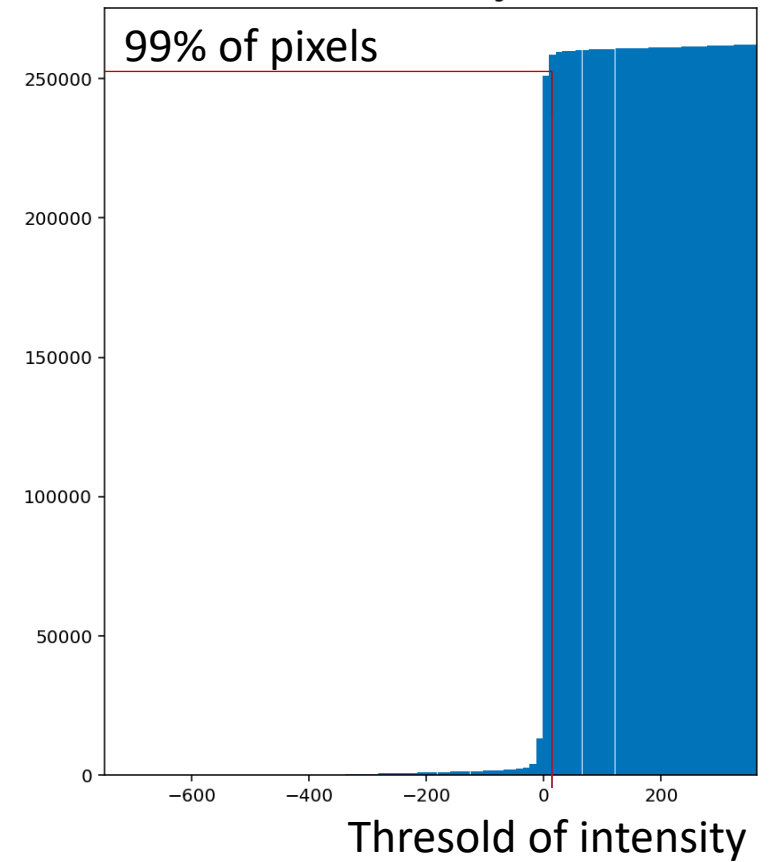


Histogram



Cumulative histogram

99% of pixels



Aim: display ca .99% of pixels
-> thanks to the cumulative histogram, it gives a threshold of intensity
-> display all pixels of intensity superior of the previous threshold

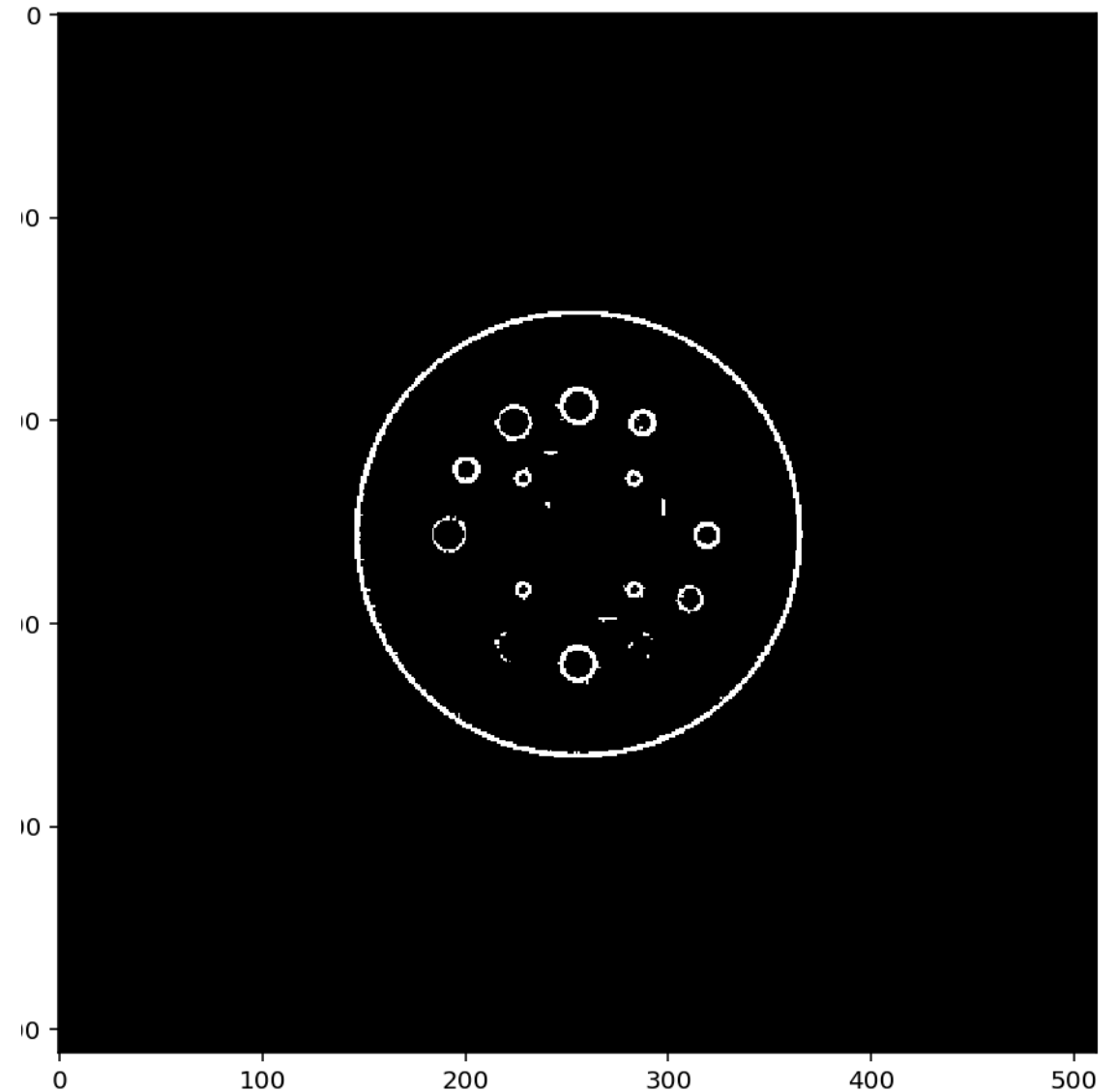
Some holes are not entirely displayed

Reasons?

- We consider only 1% of pixels, we might miss some of the pixels belonging to these holes
- But if we increase the number of pixels displayed, we will make noise appear on the image

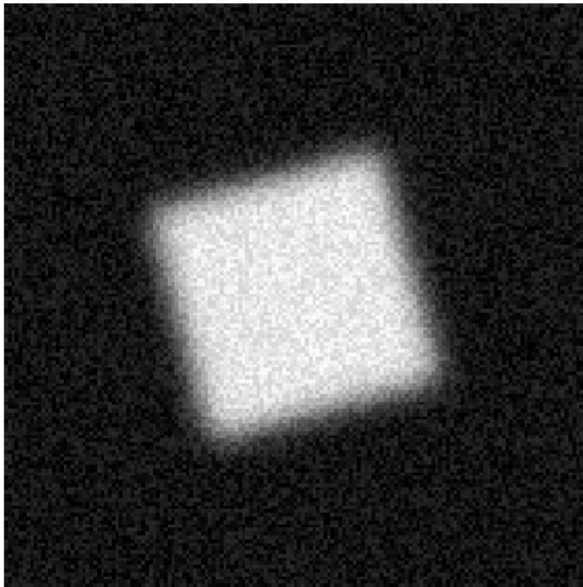
Improvements?

- Try to modify parameter of the gaussian filter (σ), the number of pixels displayed, the number of bins in the histogram
- > no optimal results but try to find a balance between all the parameters
(Parameter scans ?)

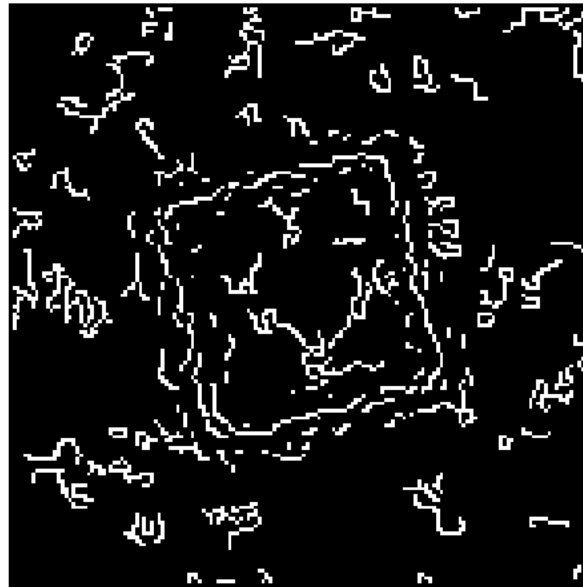


CANNY FILTER

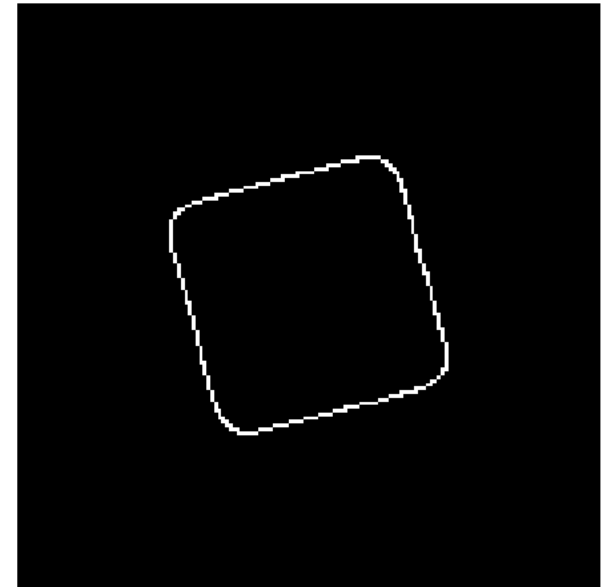
noisy image



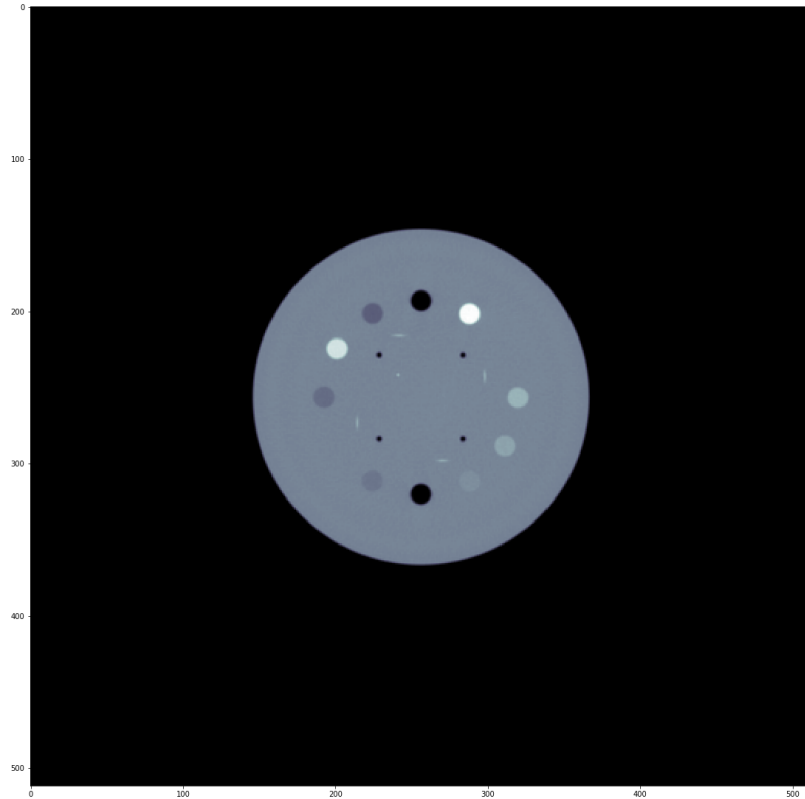
Canny filter, $\sigma = 1$



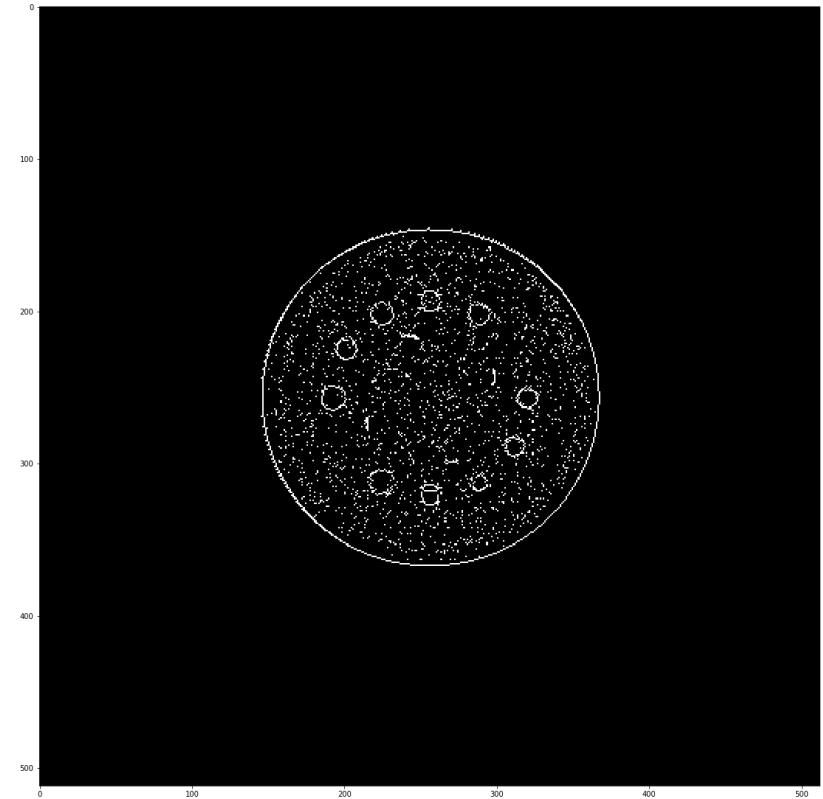
Canny filter, $\sigma = 3$



Subset method

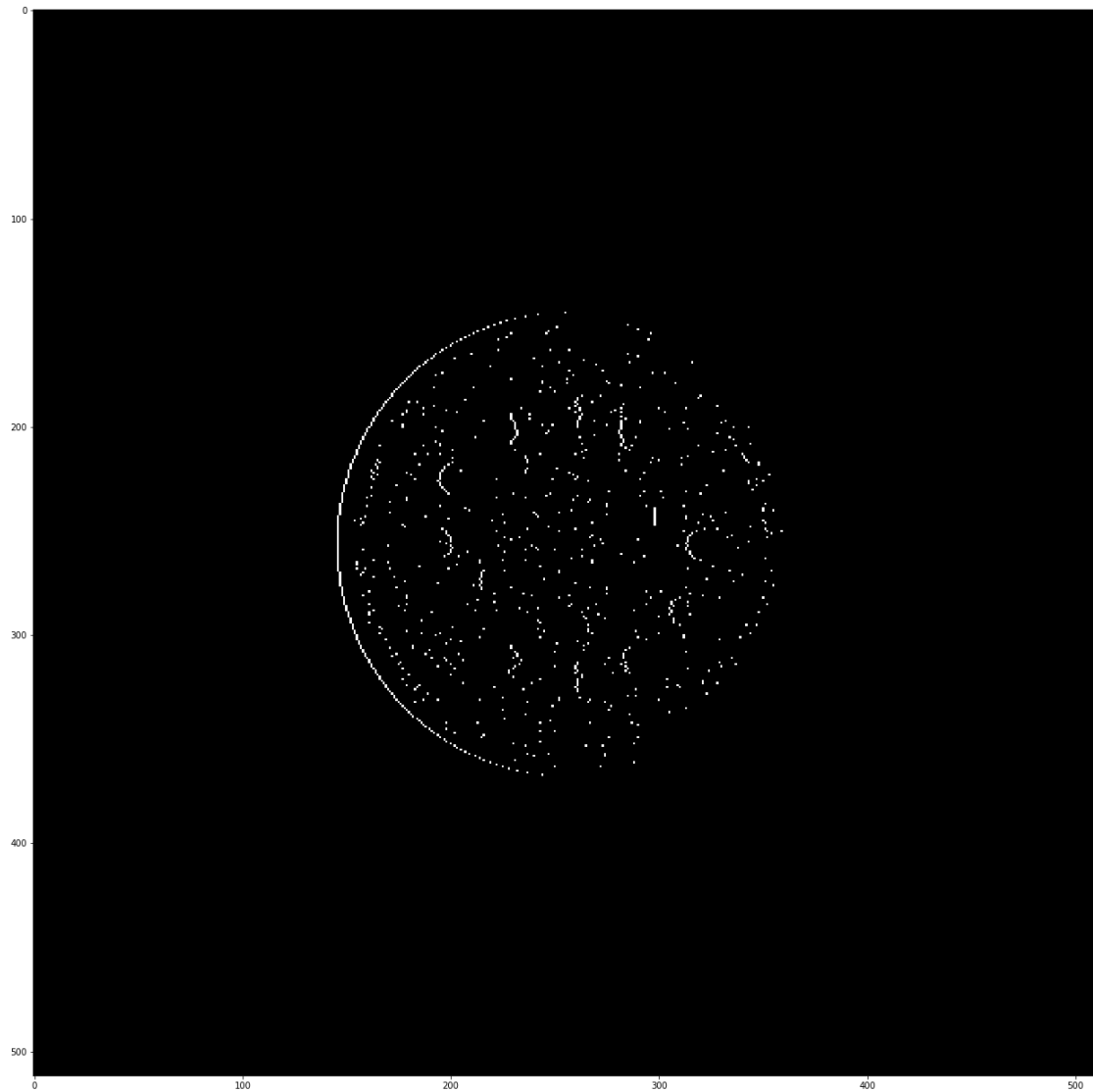


Original image

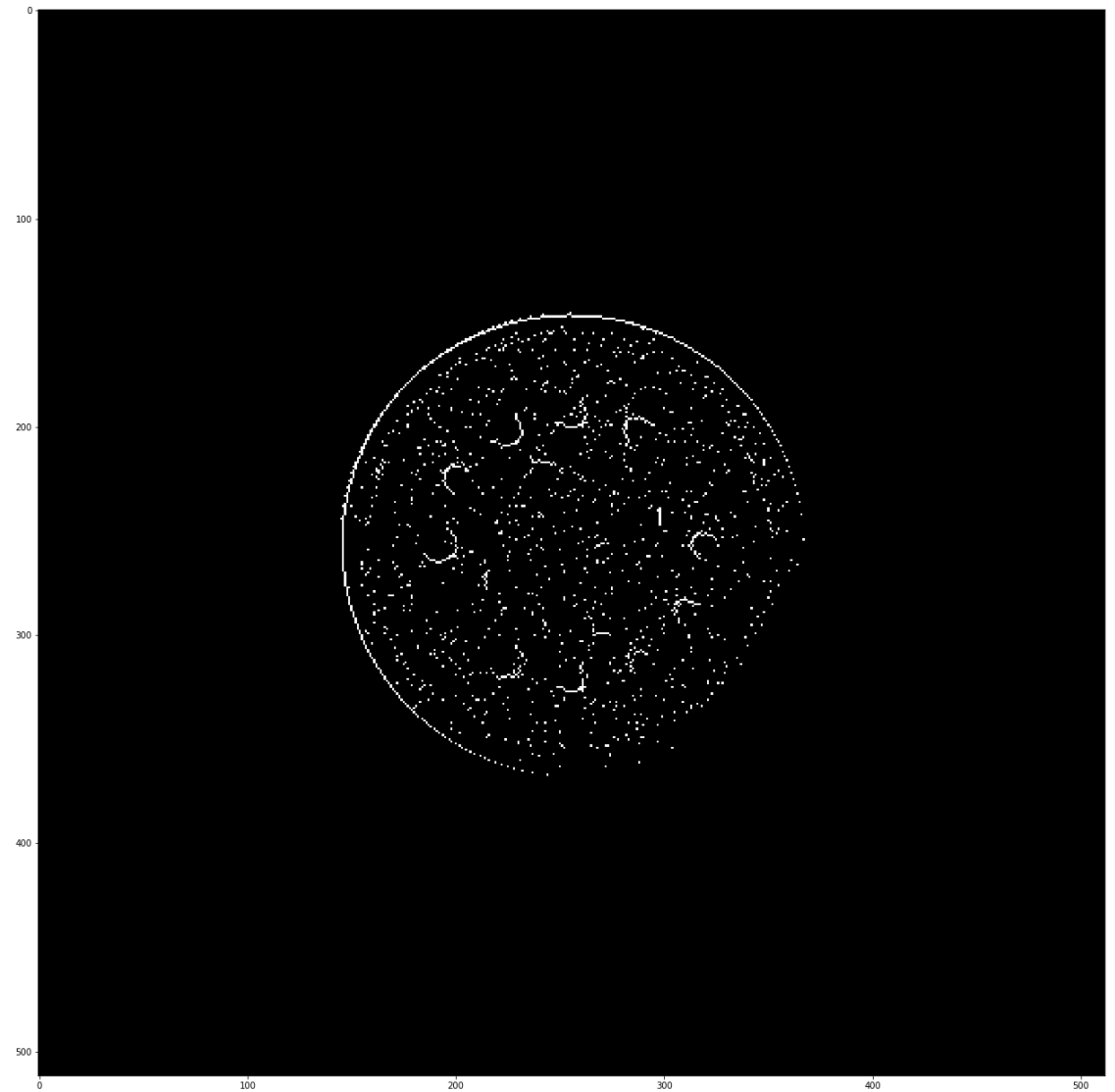


Final result

Subset method

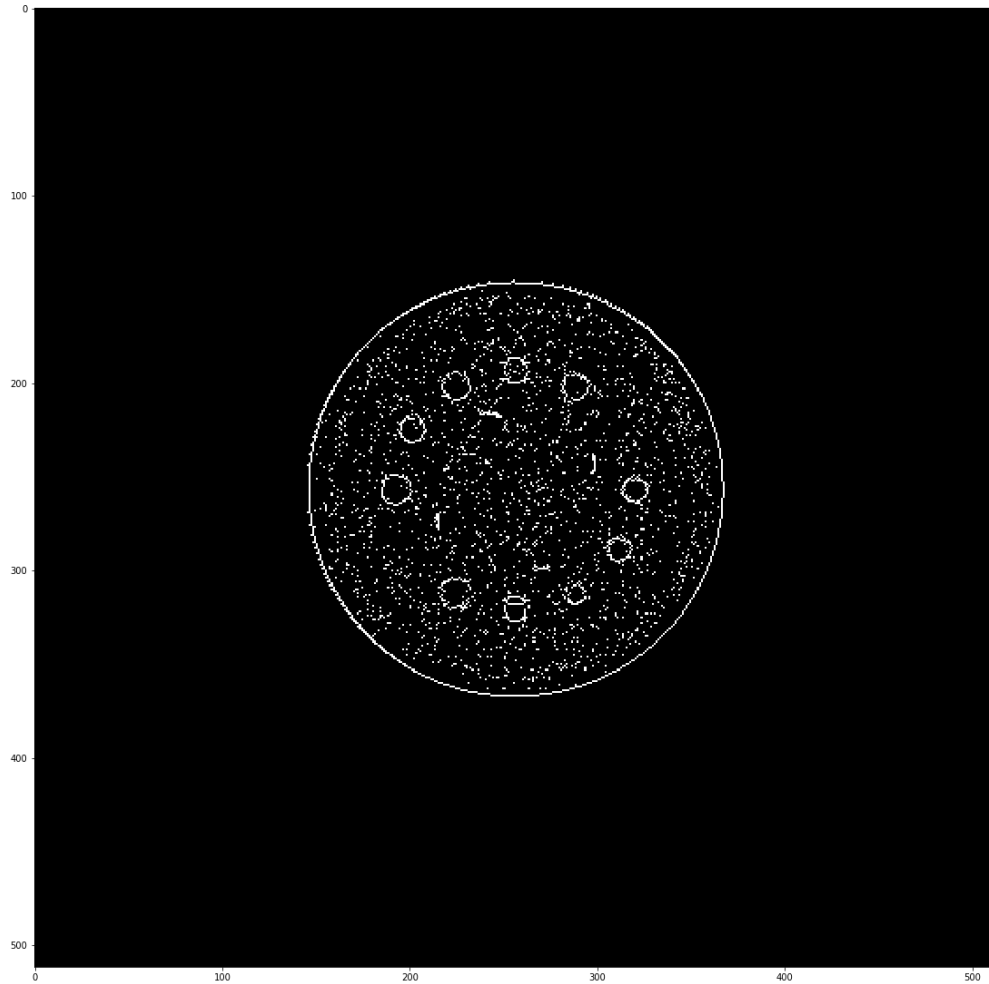


Left → Right

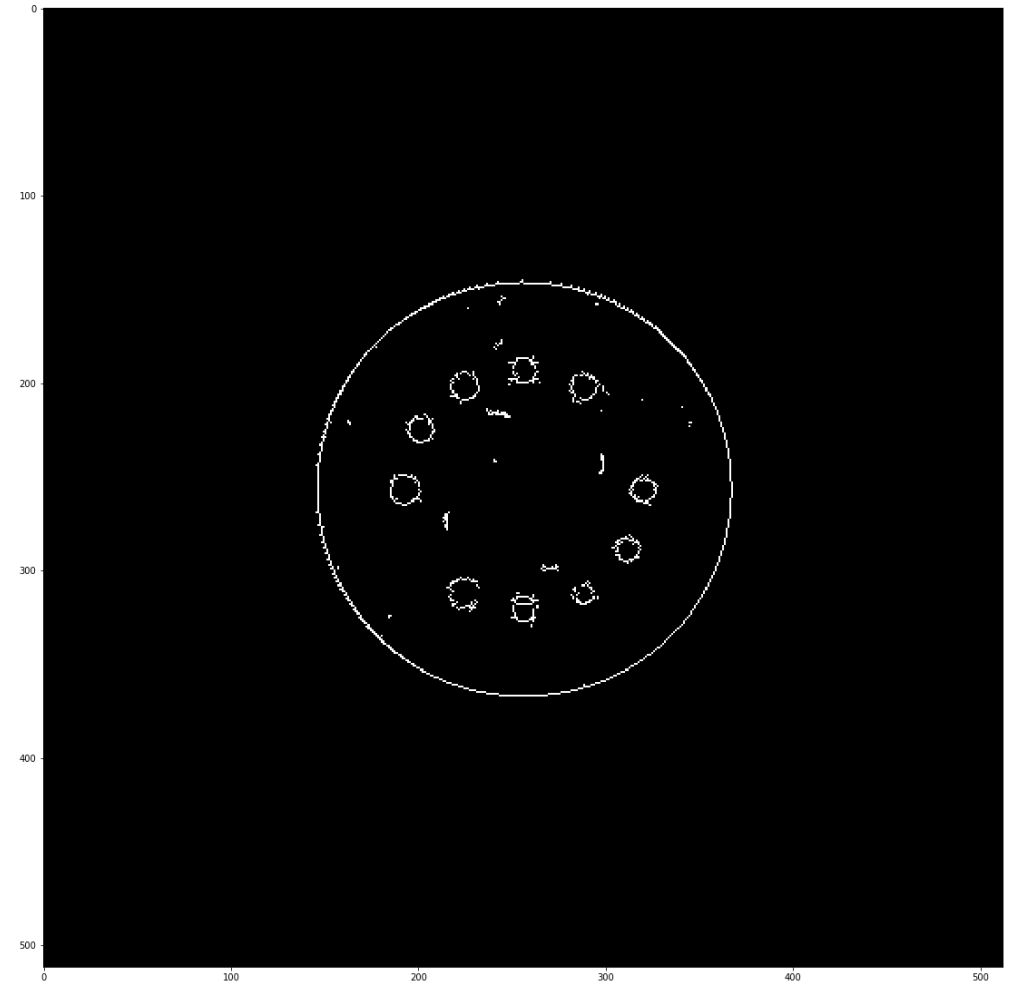


Top → Bottom

Subset method

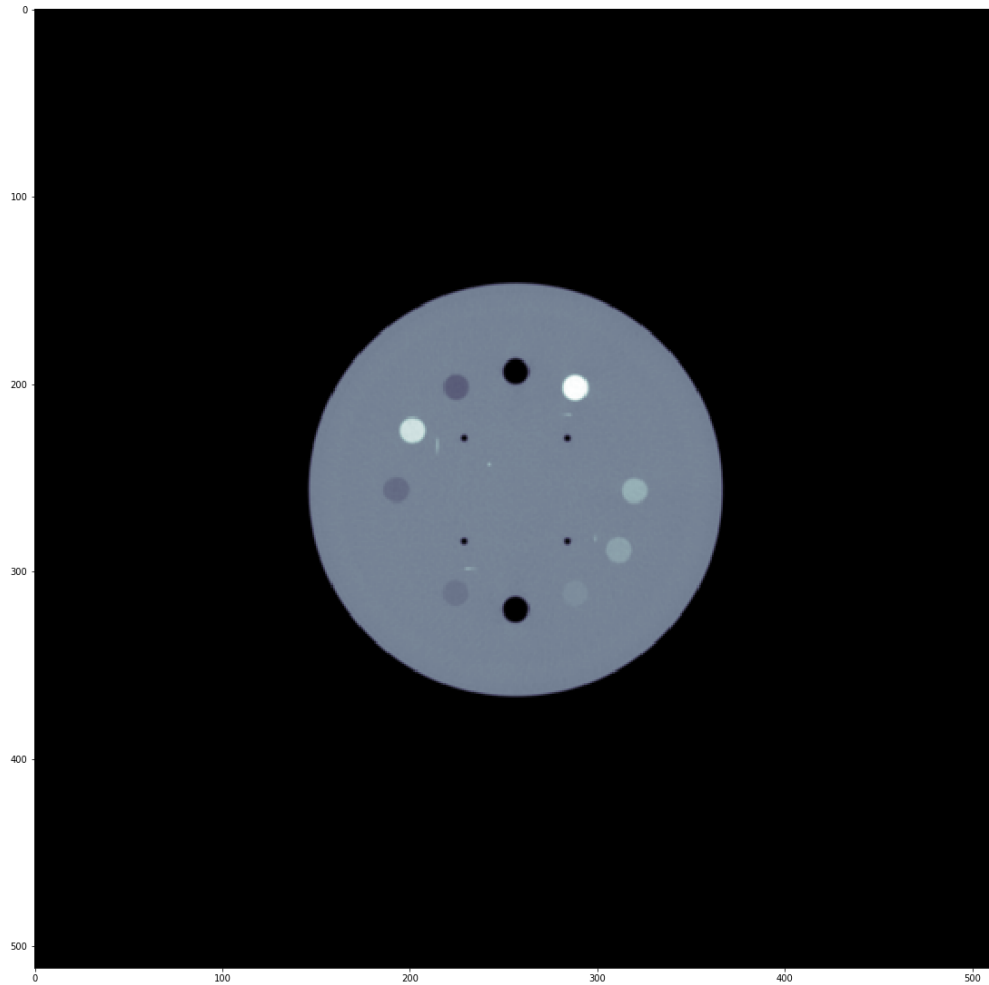


Final Result

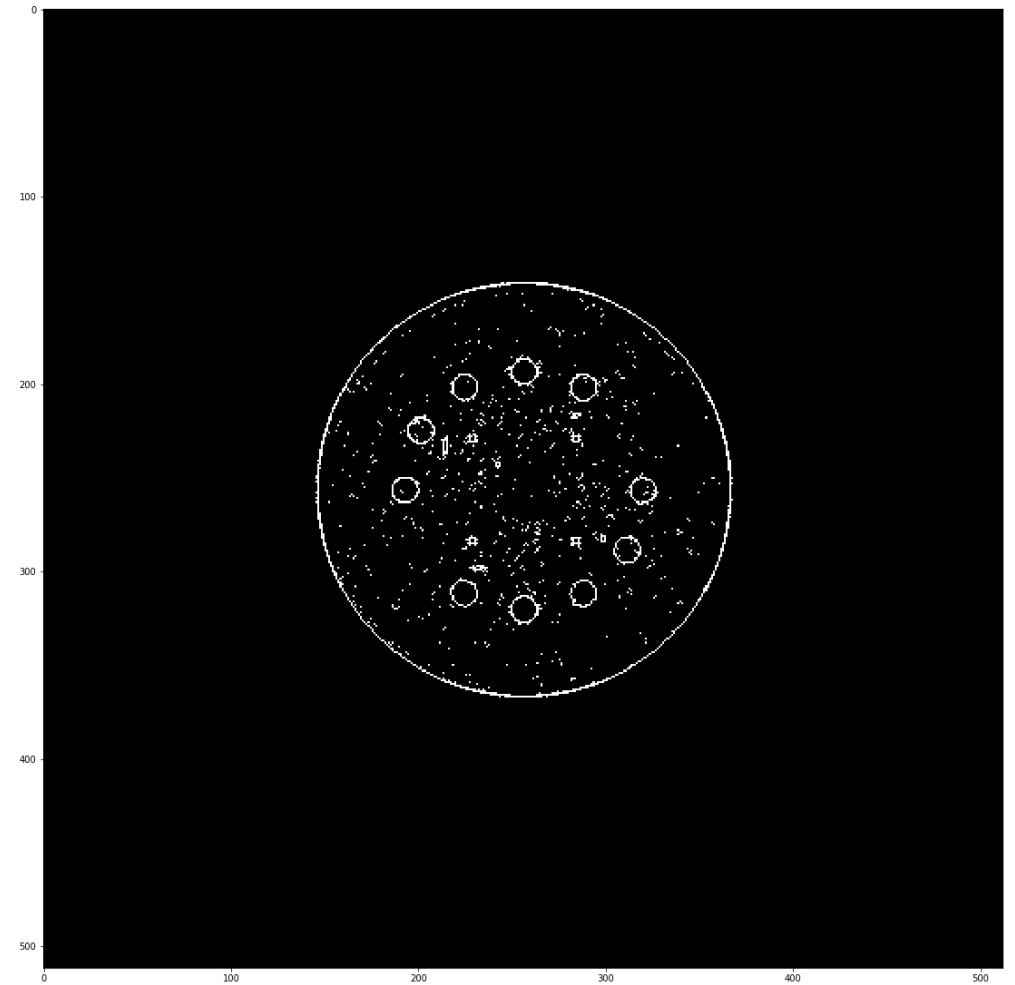


Noise Filter for isolated pixels

Derivative method

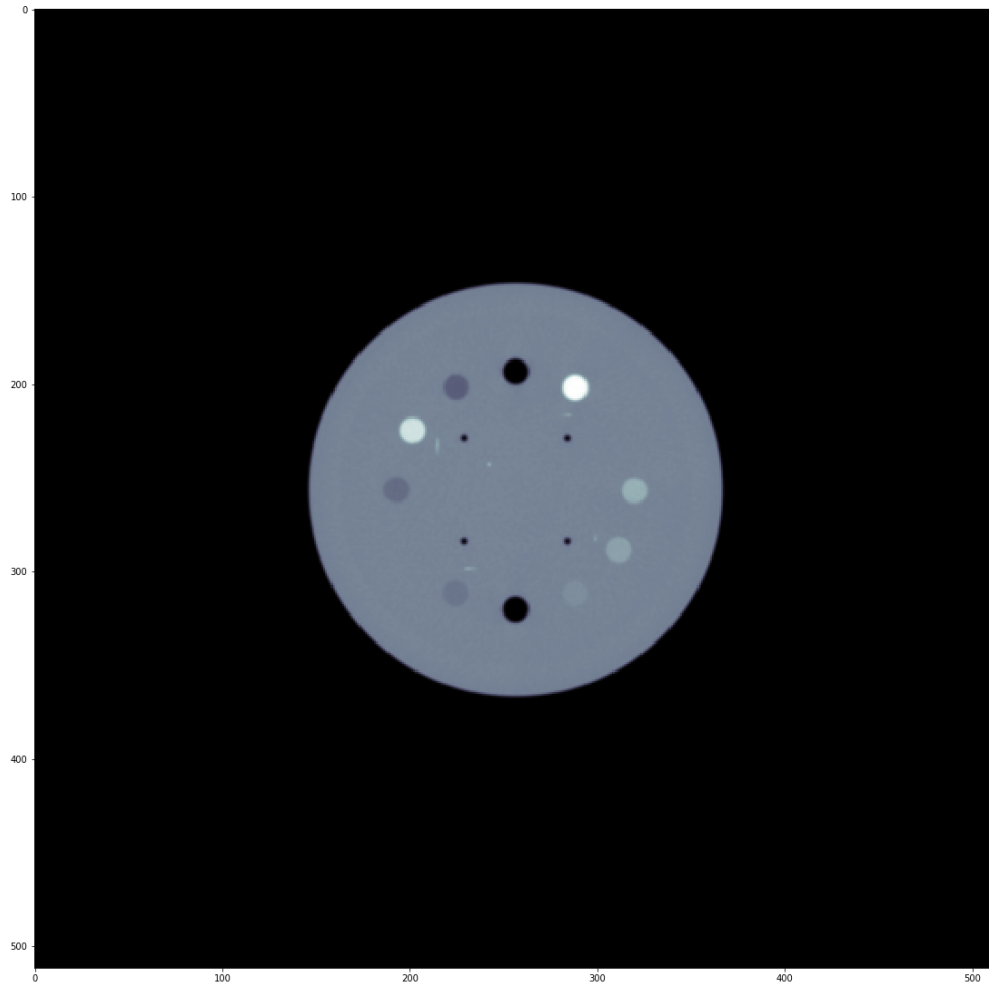


Original image

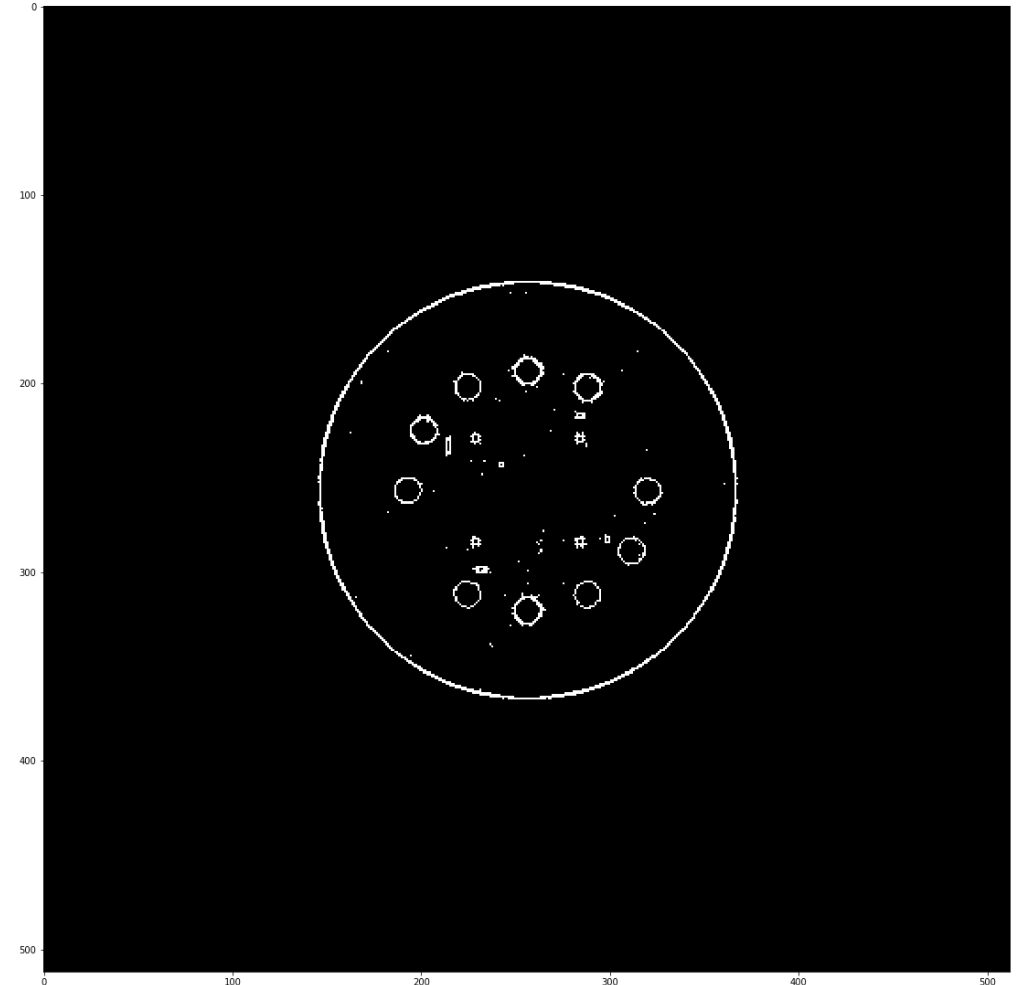


Final result

Derivative method

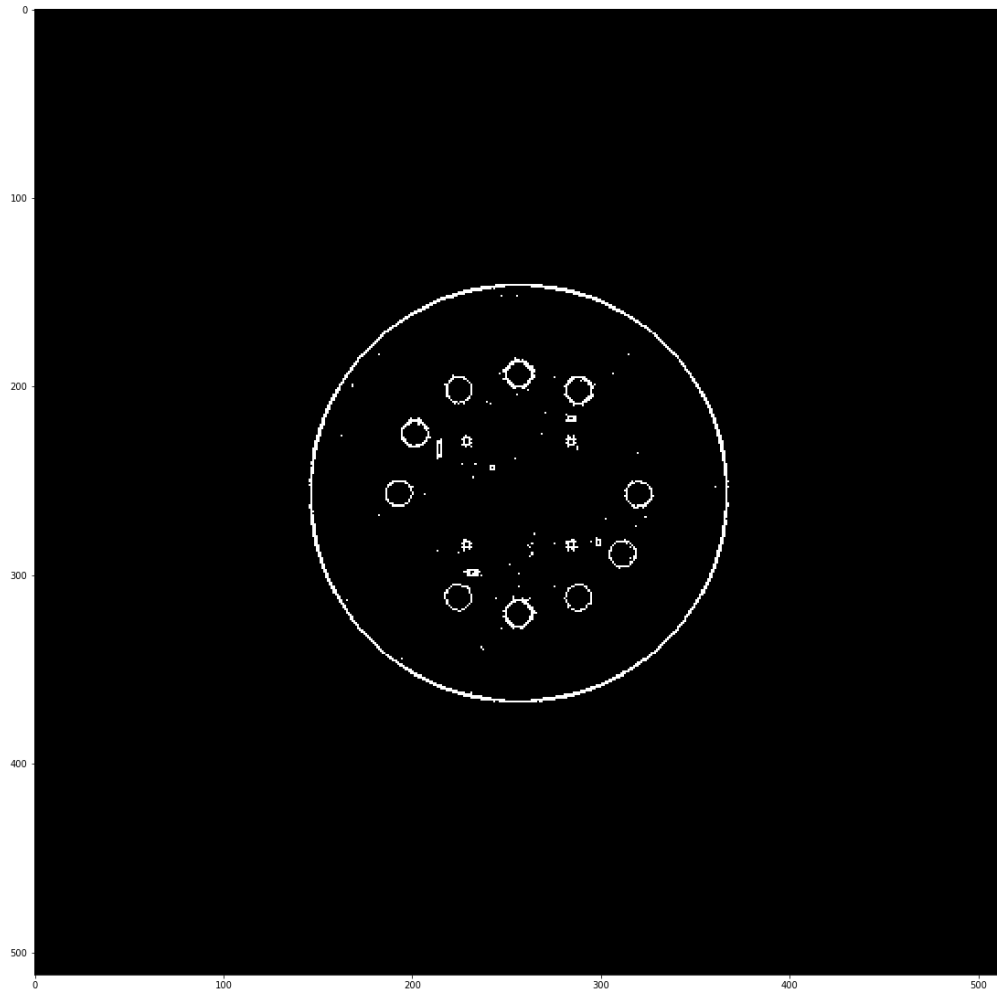


Gaussian Filter

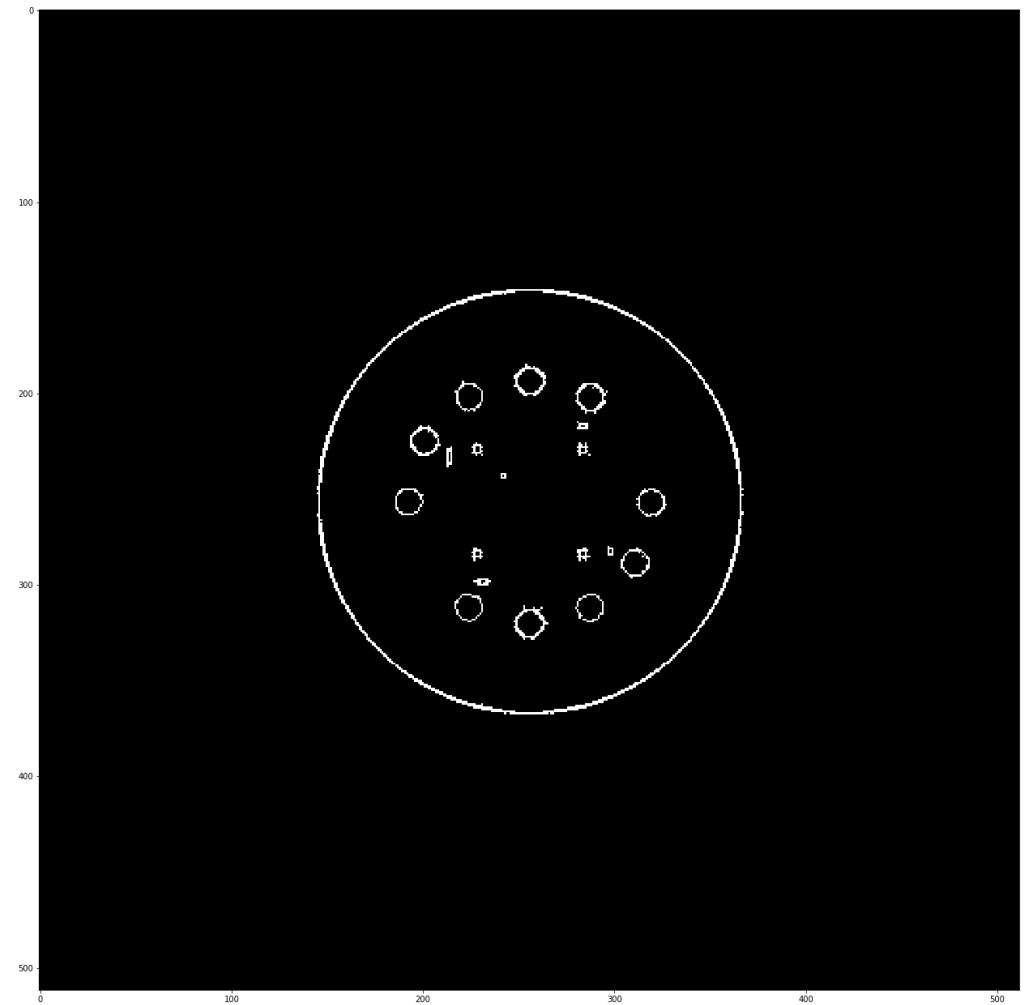


Final result

Derivative method

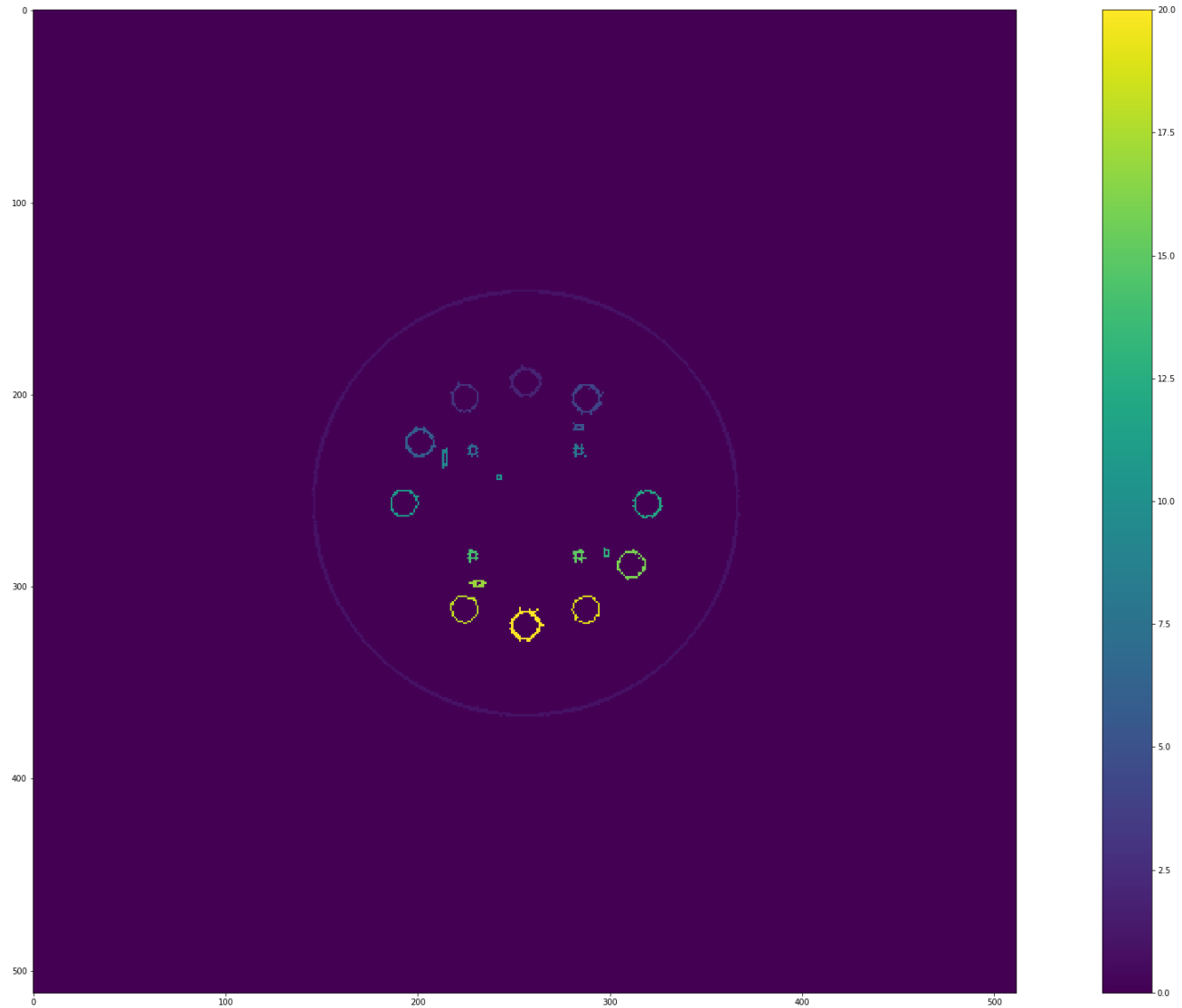


Final result with Gaussian Filter



Noise Filter for isolated pixels

Derivative method



Seperated Border