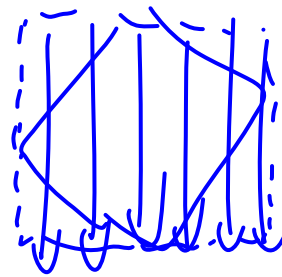
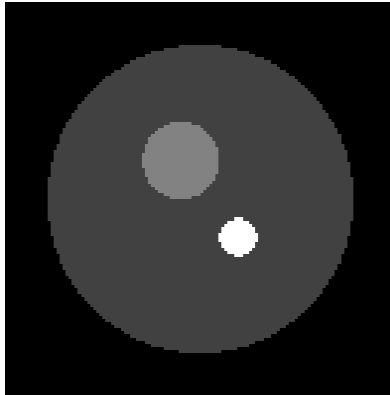


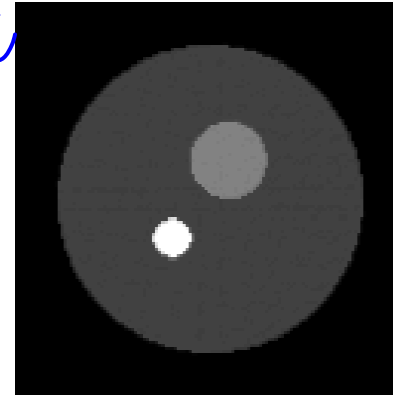
## Create Sinogram

Object



Rotate

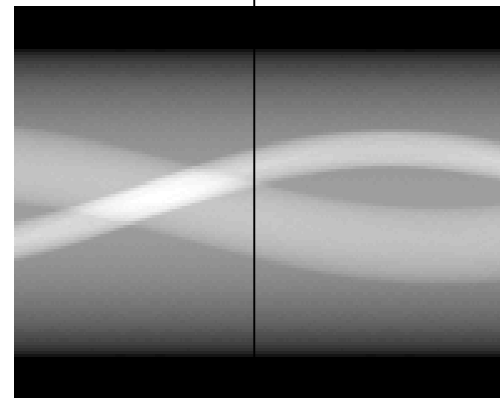
Matlab: `imrotate()`



Sum

Matlab: `sum()`

Sum



$r$  ↑

→ View

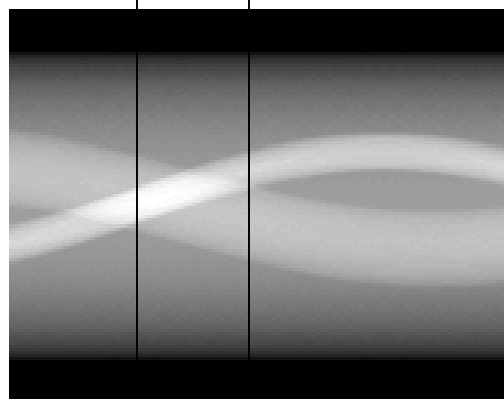
Sinogram

$$Q = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \\ 10 & 11 & 12 \end{bmatrix}$$

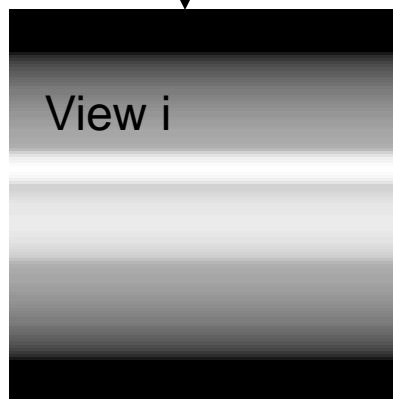
$$\text{sum}(a) = [14 \ 17 \ 20]$$

# Backprojection

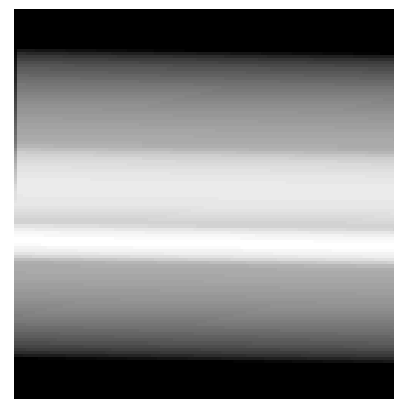
0-degree back-project one projection into 2D image



r



View i

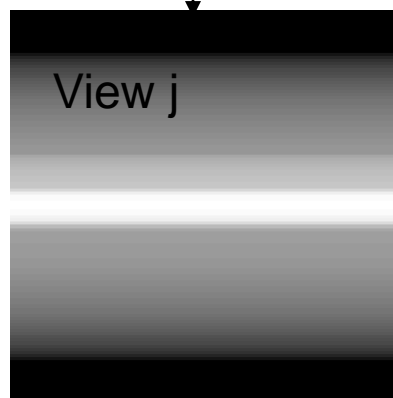


Rotate into the right view

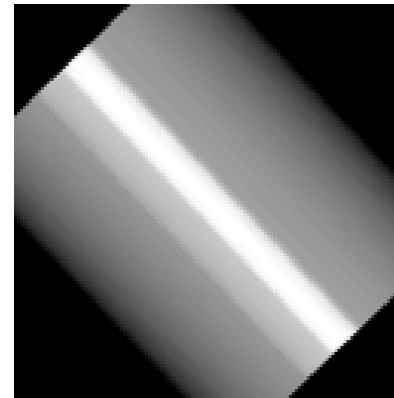
Matlab: imrotate()

0-degree back-project one projection into 2D image

$$a = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix} \Rightarrow \begin{bmatrix} 1 & 1 & 1 \\ 2 & 2 & 2 \\ 3 & 3 & 3 \end{bmatrix}$$



View j



Rotate into the right view

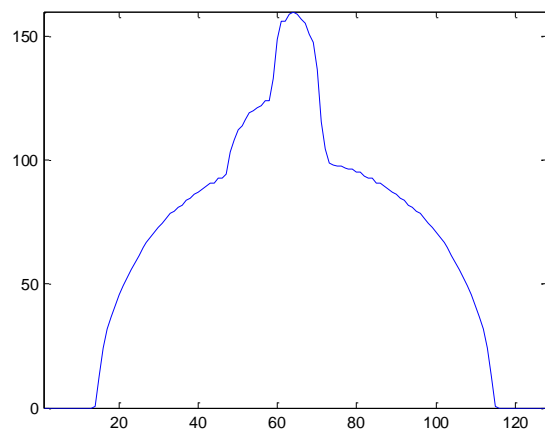
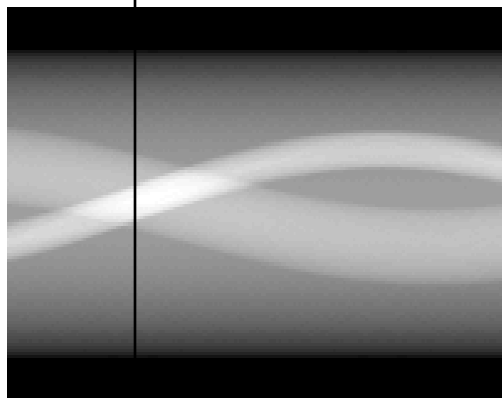
Matlab: imrotate()

Sum

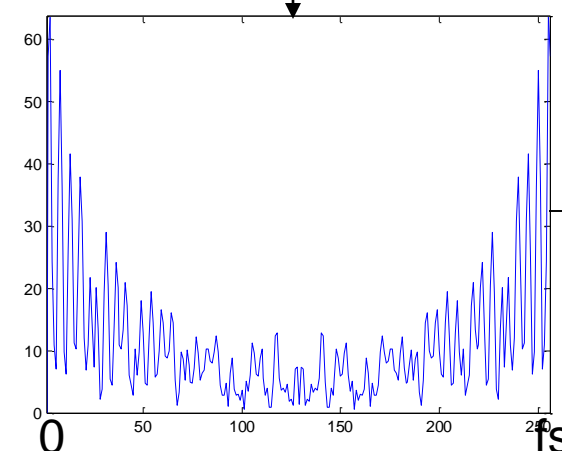
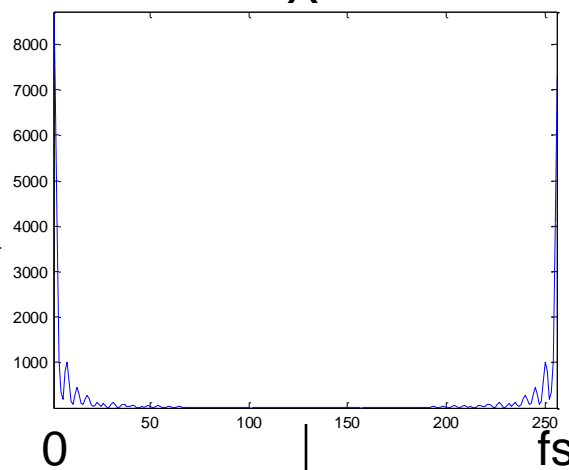
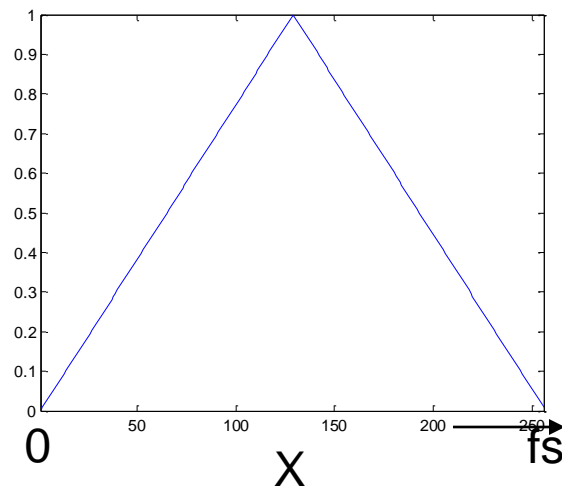
$$a \times [1 \ 1 \ 1] = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix} \begin{bmatrix} 1 & 1 & 1 \end{bmatrix}$$

3x1      1x3

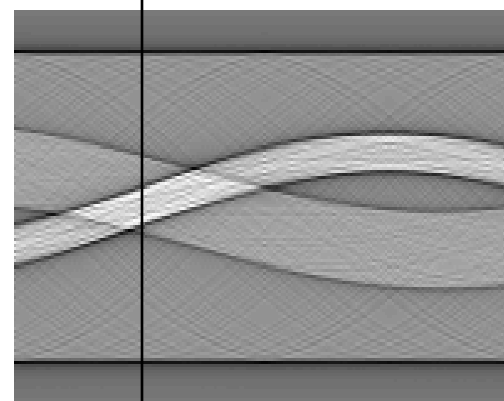
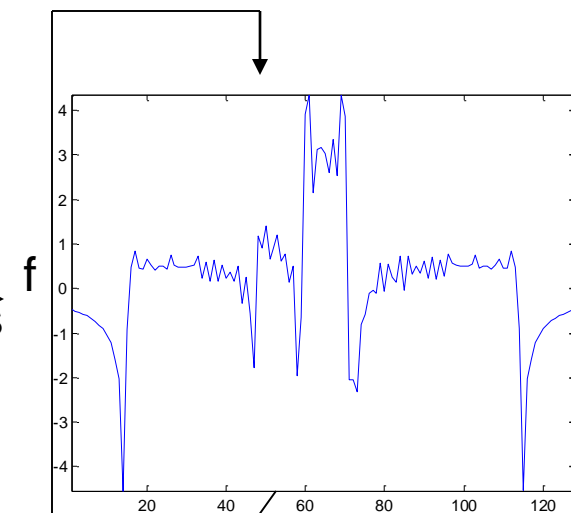
Filtering



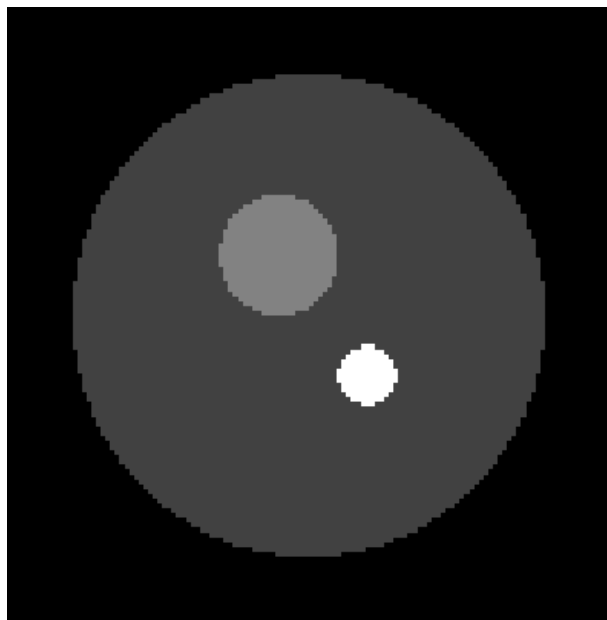
FFT



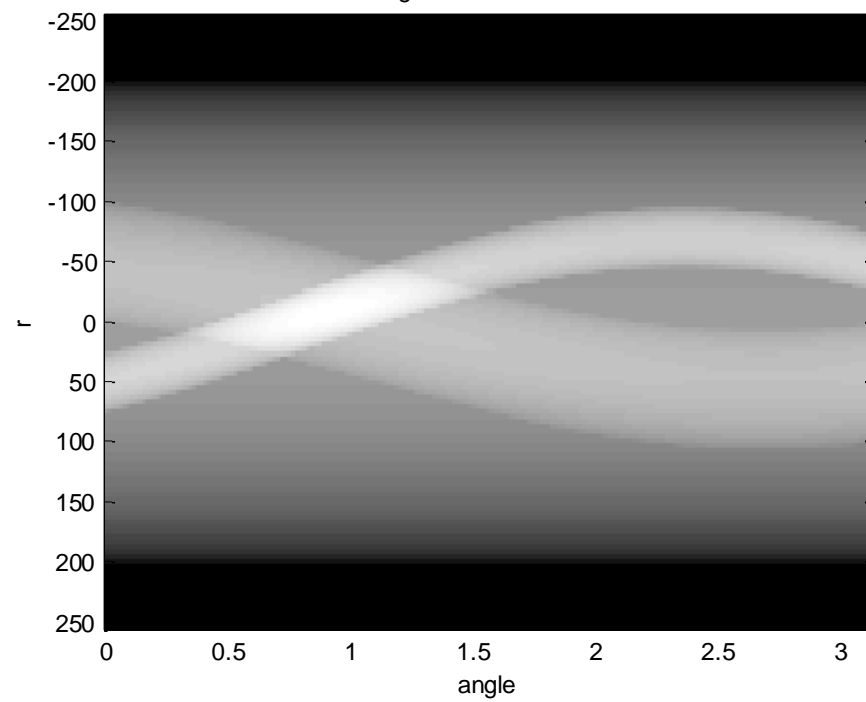
IFFT



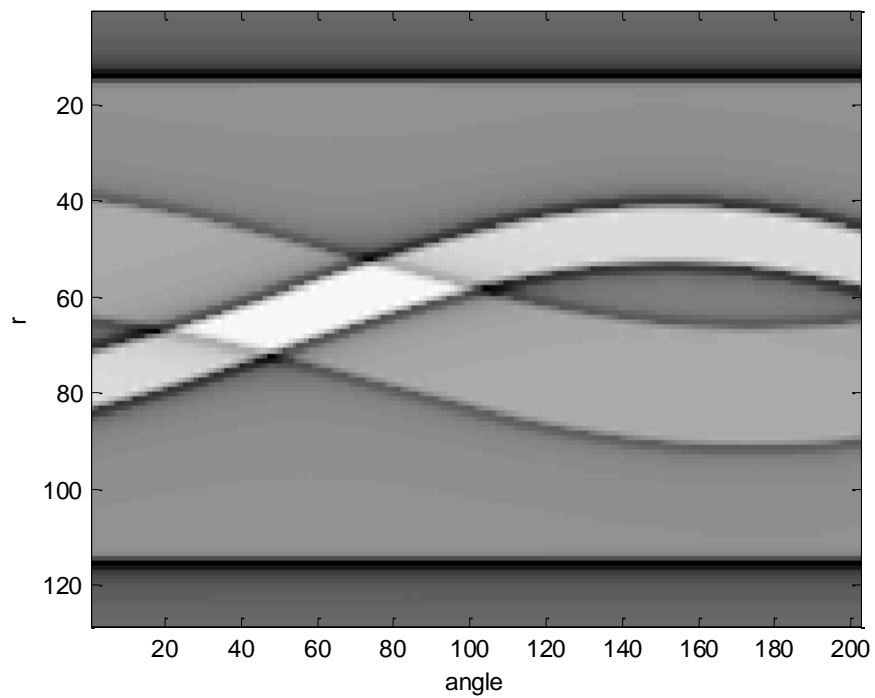
Disk Phantom



Sonogram of Disk Phantom

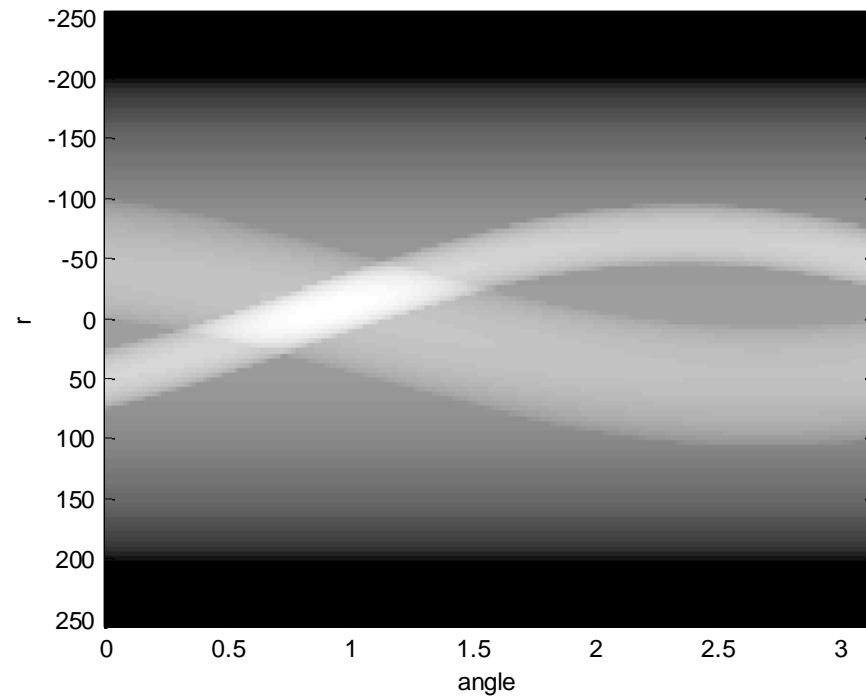


# Filtered sinogram

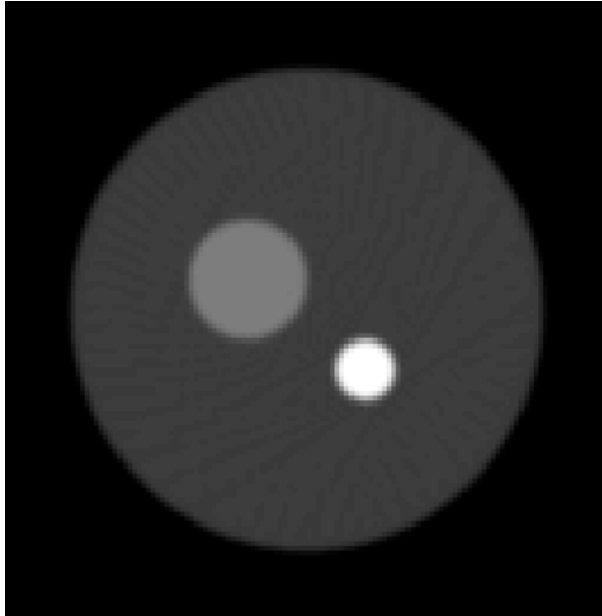


# Original sinogram

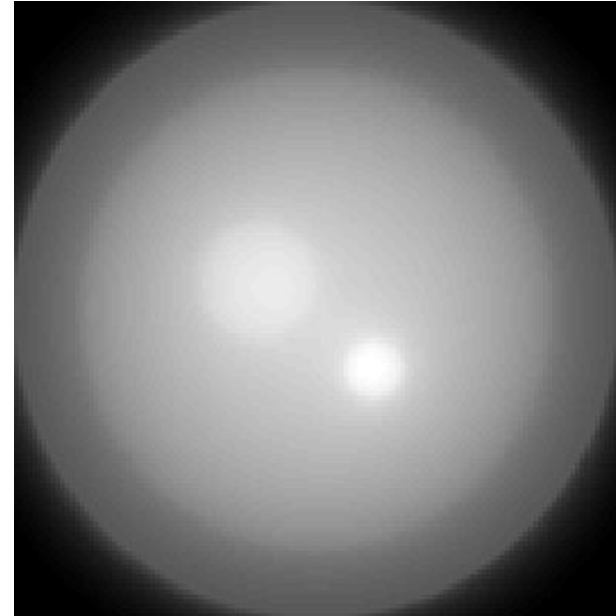
Sonogram of Disk Phantom



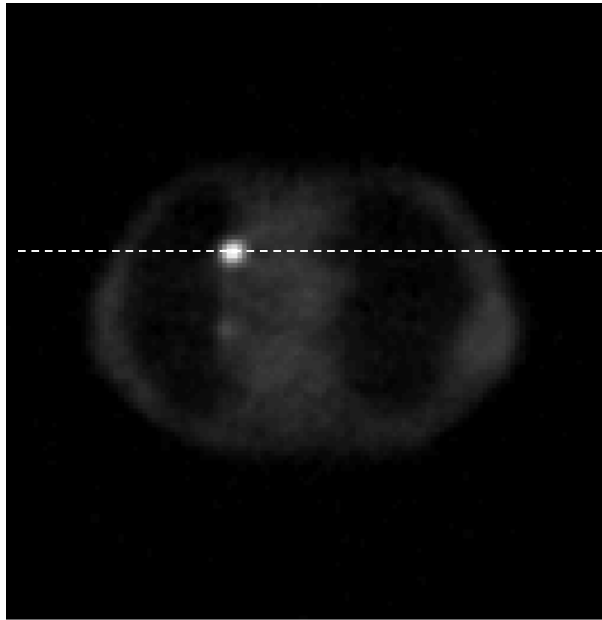
Filtered backprojection w/ Hamming window



Laminogram



Filtered backprojection w/ Hamming window



Laminogram

