Naively reconstruct the image by taking inverse FFT, we get the naive image.

Naive image

median filter
threshold

$median = normalize(ndimage.median\_filter(img, 10))$
$head = median > 0.1$

Determine the box
constraint

x_lb and x_ub
- Inside head: pixel $>= 0$
- Outside head: $-4 <= pixel <= 4$