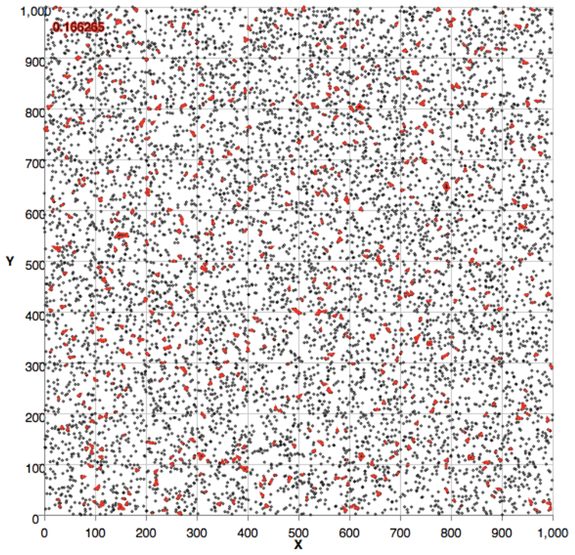
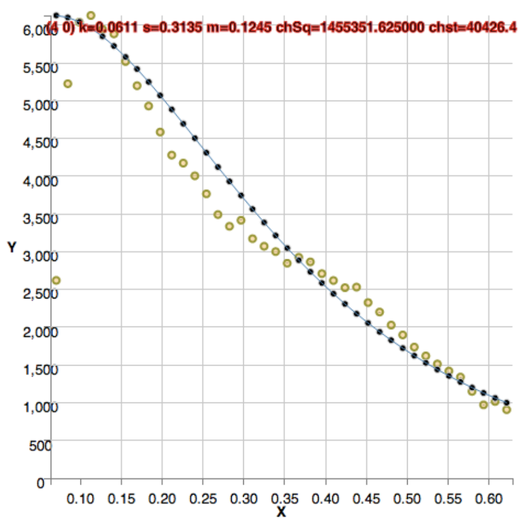
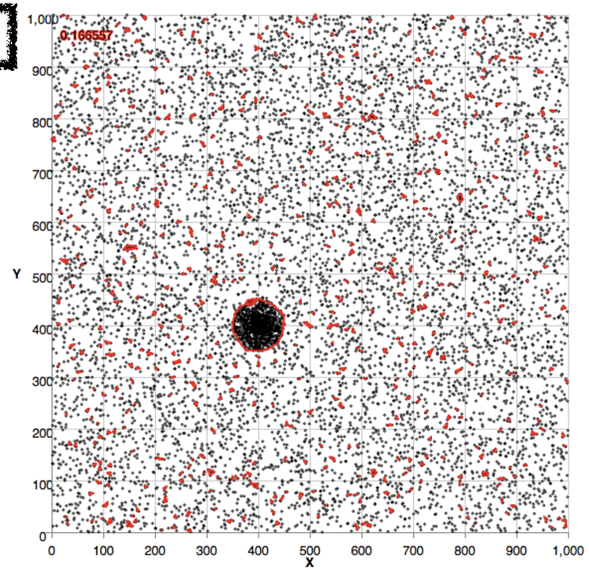
Below are 9000 randomly placed points in a 1000 x 1000 unit space, A, B, C, and D all have the exact same set of 9000 points. B and C have a large group of 1000 points added to them.
In B, one can see that the large added group changes the density histogram, hence the results for finding groups are slightly different.
To help correct for that, one can apply a “refinement” stage that runs the code once, then subtracts the found groups, then reruns the code on the remaining points to create a new density histogram of points to better determine the background density. C and D show the results of “refinement” and one can see that the resulting groups are very similar now and so are the density histograms. That implies that for large N, one needs a refinement pass to get the best background density estimate.

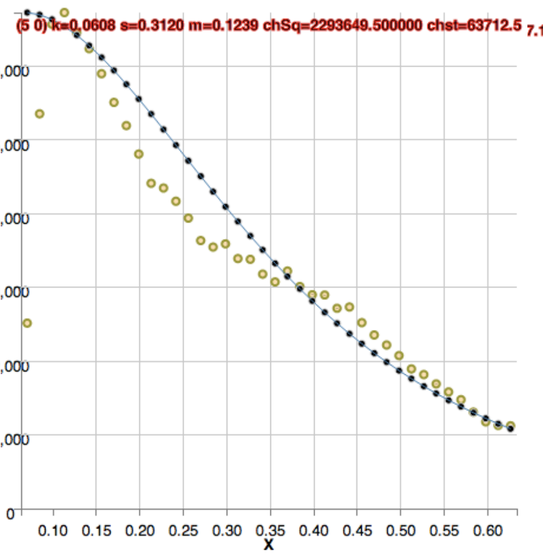
A



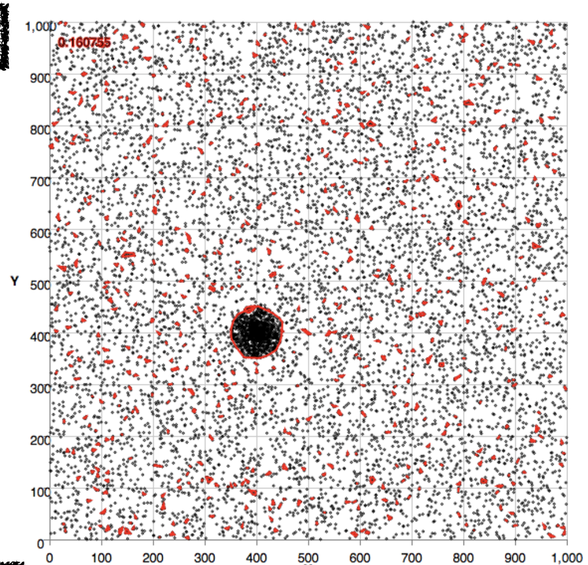


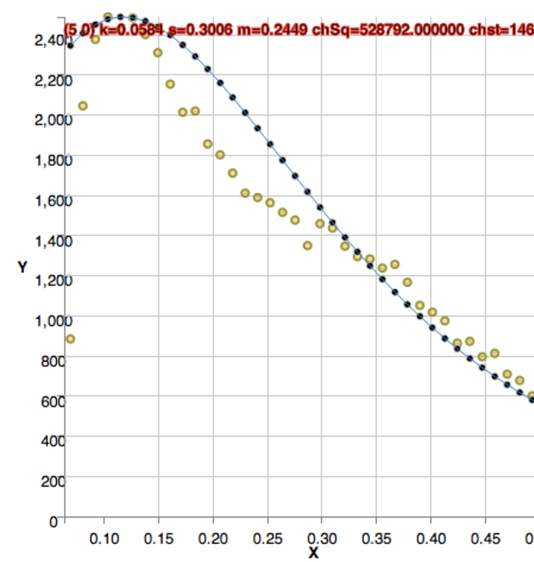
B





C





D