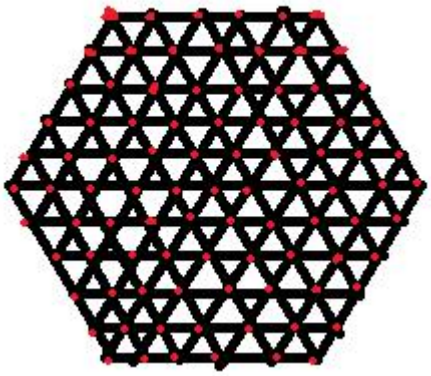
At first I simulate a perfect honeycomb:



This a a honeycomb, the red points are the grid I use for simulation. The reason I don't use rectangular grid, is to make it easier to satisfy the boundary condition that at the boundary, the height of the points should be zero.

I assume that all the red points are connected with their neighborhood with a string, then the function describing this interaction between each point is:

$\nabla^2 z(x,y) = p$. z is the height of the red point, p is some constant related to the pressure. Since the pressure at each point is the same, so on the right hand side, it should be a constant, I call it "p".

Then on the left hand side, it is the force acting on one red point at (x,y) from its neighborhood through the strings. Since I don't use the rectangular grid, this differential equation become:

$$z(x+1,y)+z(x-1,y)+z(x+0.5,y-0.5\sqrt{3})+z(x+0.5,y+0.5\sqrt{3})$$
$$+z(x-0.5,y-0.5\sqrt{3})+z(x-0.5,y+0.5\sqrt{3})-6z(x,y)=0.001$$

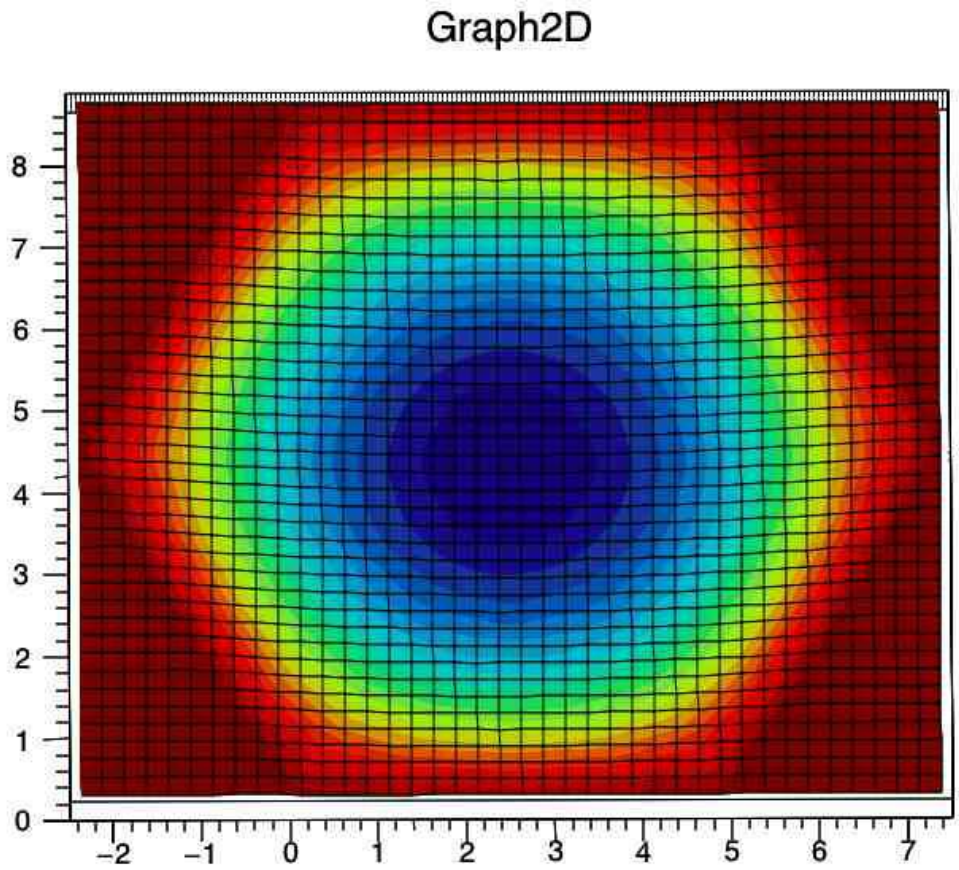
(These are the constant I use for simulation, 0.001 is p, and the "distant" between each point is 1, I think these constant are OK for this rough simulation)

I use all six points, which is surrounding the point I want, for calculation. Then I get the expression for this points:

$$z(x,y)=[z(x+1,y)+z(x-1,y)+z(x+0.5,y-0.5\sqrt{3})+z(x+0.5,y+0.5\sqrt{3})$$
$$+z(x-0.5,y-0.5\sqrt{3})+z(x-0.5,y+0.5\sqrt{3})-0.001]/6$$

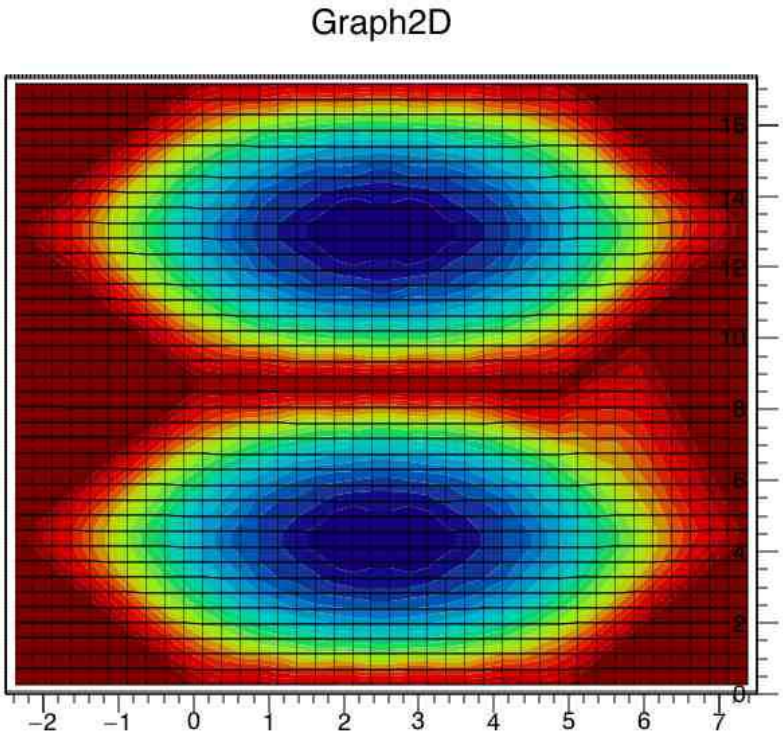
So I can use iteration to get the result, but not solve this set of equations. (I set 5000 times circulation, and the result is almost the same as 1000 times, about 1% difference.)

Result:

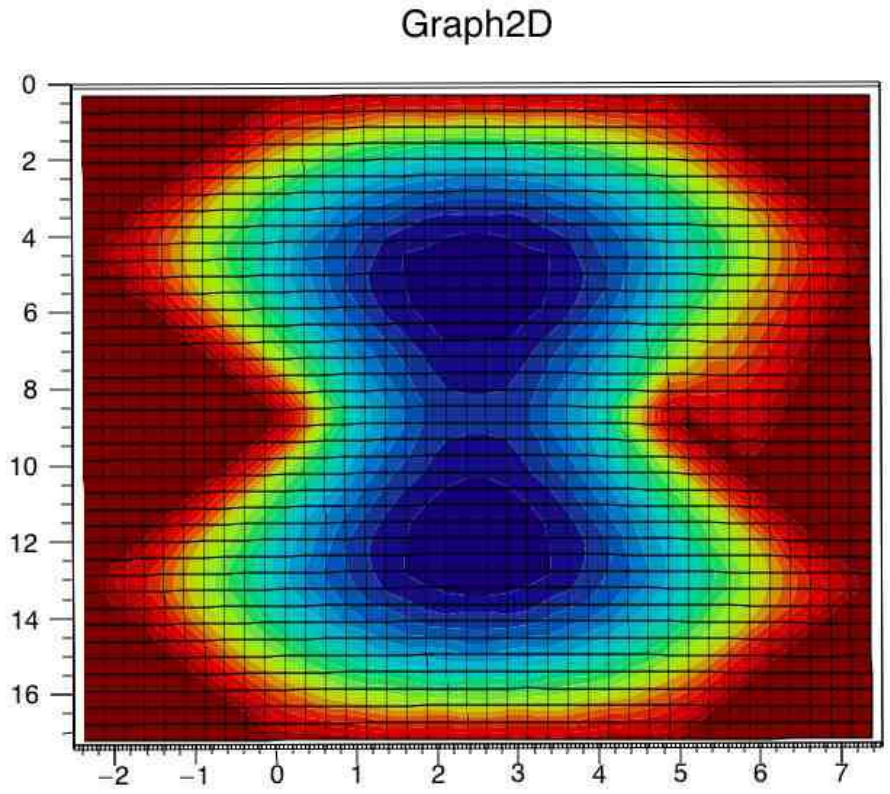


I don’t know how to show the height yet, I will add it later.

Then I try two honeycomb. First, two perfect:

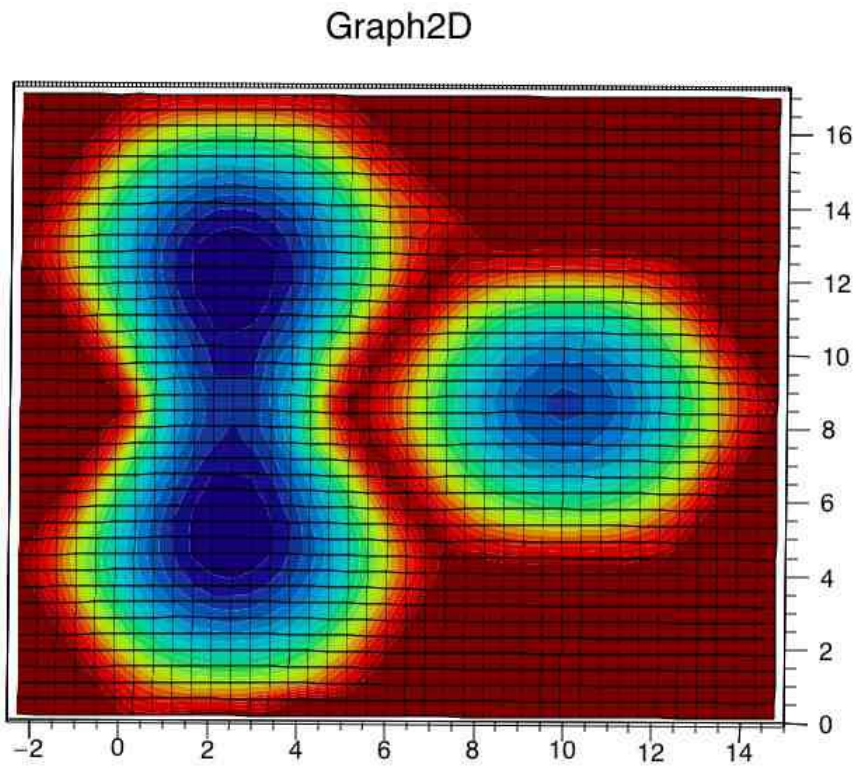


Then the wall between these two honeycomb is missing:

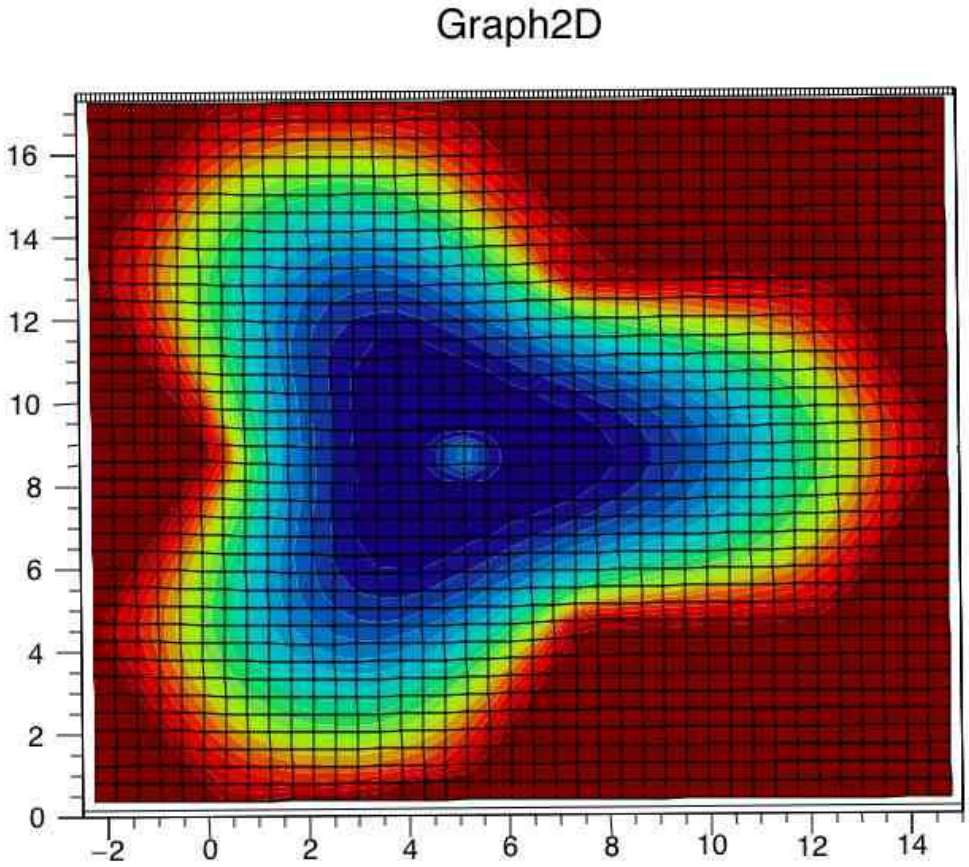


And three honeycomb:

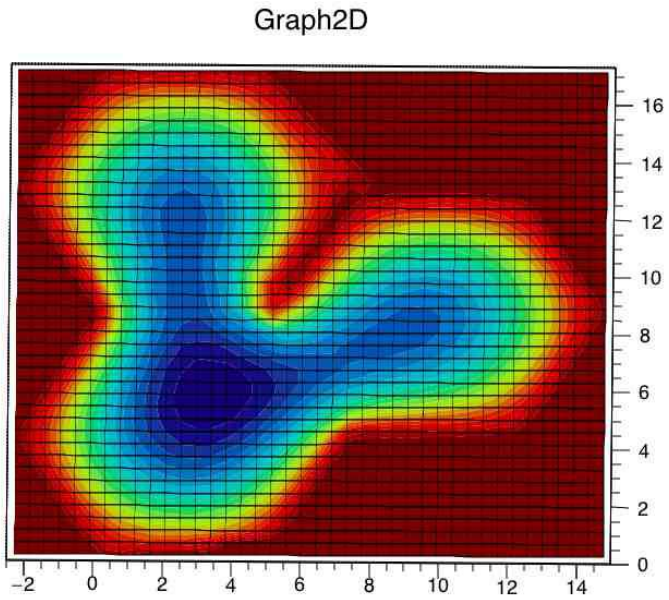
1: one perfect honeycomb and a wall between other two is missing:



2: all the wall are missing:

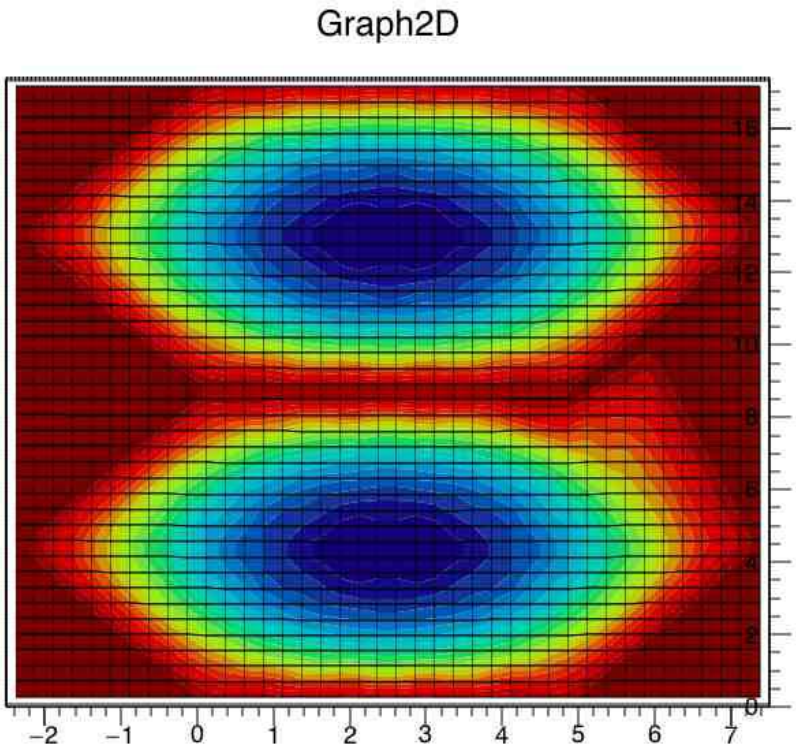


3: one of the wall is missing:



At last, I have three questions: 1, I am not sure whether the function I use is good enough;

2: For this graph, there may be something wrong, since it is not completely symmetry, but on the right side there is some rising. I check the data(the raw value of each point) output from the root, there is no rising, which is so weird.(And I am still trying to figure out the reason)



3: The biggest problem is that, if I know where the defects are, maybe I can do this simulation, then draw a graph and compare this graph with the one from the experiment, the real data. However, if I only have the graph from the experiment, the data, then I don't know how to find the defect, even I can do this kinds of simulation.