Project 1

1.1 Advection

I chose to hard code the Gaussian parameters, it will write to stdout the parameters it will simulate before beginning and the following is my parameters:

N = 200 (Matrix Dimension)
NT = 10000 (Number of timesteps)
L = 1 (Physical Cartesian Domain Length)
T = 1e+06 (Total Physical Timespan)
u = 5e-07 (X velocity Scalar)
v = 2.85e-07 (Y velocity Scalar)

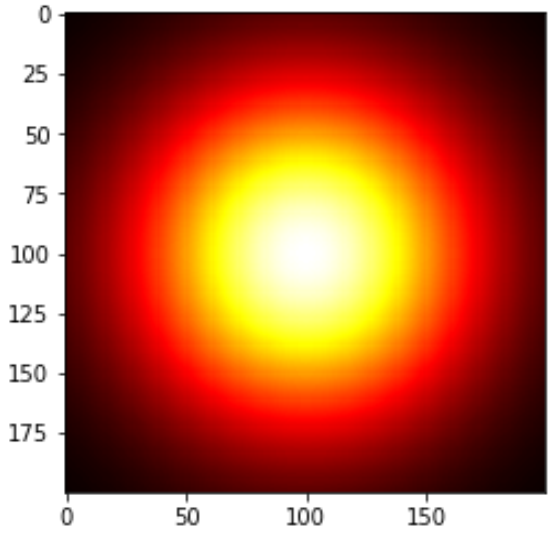
The estimation of amount of memory required: 8 byte for double, there are 200*200 *2 * 8 byte = 80KB.

just need to build the ***main.cpp*** and ***milestone.h*** in folder ***project1***

1.2 Plot

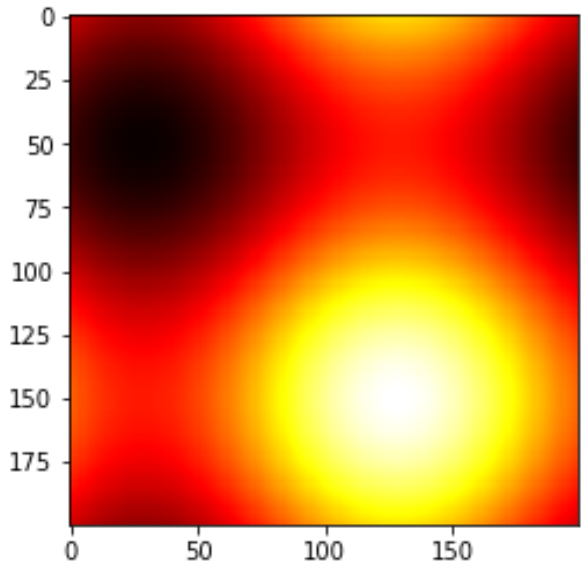
I draw these three plots using python.

1 initialized Gaussian distribution.



2 halfway

I draw this plot when n == NT/2



3 final result

I draw this plot when the algorithm has finished.