

# PHY566 Group Project #2 (version B)

Due Date: April 13th, 10:00am via Sakai

## *Predator-Prey Model*

Write a program that simulates a two component predator-prey system (fish and shark) as discussed in class. Make your world two-dimensional with periodic boundary conditions. The parameters of your system are: initial number of shark, initial number of fish, number of time steps for fish and shark to procreate, respectively, and the number of time steps for shark to die of starvation.

1. Keep track of the number of fish and shark in every time-step and plot the populations as a function of time. Tune your parameters to achieve a system that does not suffer from extinction but exhibits quasi-periodic behavior over several hundred time steps [35 points].
2. Provide snapshots of configurations of your system (fish and shark in your 2D world) for a few representative time steps – or alternatively modify your program such that it creates and updates a visualization of your system after every time-step [15 points].

Your homework submission should consist of:

- a public Github account, containing the code and revision history for all codes developed in this project. You need to invite the instructor (Github account: **sabass**) to become a member of your repository.
- a document outlining the problem, detailing your solution and discussion of your results - the document should include the requested figures. The document should be in pdf format
- the source code of your program should be downloadable from the Github account - do not submit the code via Sakai, but provide a link to your repository in your document.
- a group presentation to be given in class