

PHYS2201 Project 2: Quantifying Chaos

August 30, 2018

Analysing a chaotic system

Adapt the code given in the videos (or the workshop) to model the double pendulum (from Assignment 7). Then extend this code to calculate a Lyapunov exponent for your system. The algorithm for this is given in the Chaos section of week 8. You should demonstrate a calculation of a Lyapunov exponent in both a chaotic and non-chaotic regime for your system. Write enough words that your simulation makes sense to someone who has not seen these instructions.

Comment your code! To assess your understanding of the numerical algorithm, we will mark your comments as well as the correctness of the calculations you present.

Getting Help vs Plagiarism

This project will take some people out of their comfort zone. Computational work can be frustrating all the way up to the point where things suddenly start working. Feel free to discuss this with lecturers/tutors/friends/each other. Feel free to look up books or webpages, or similar.

But you have to submit your own work, and write your code yourself. Reference anything you use. If you work with people, put a list of their names on the cover. For this project let's use the rule: **do not copy and paste from anything or anyone**. Look at someone's code by all means (and then tell us you did, as noted above), then go write your own version. Read a treatise on the system, but then go write your own analysis. Do not paste or transcribe.