Lab 6

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Nonlinear Dynamic Systems , Fall 2020

Chaos Game

Experiment goals:

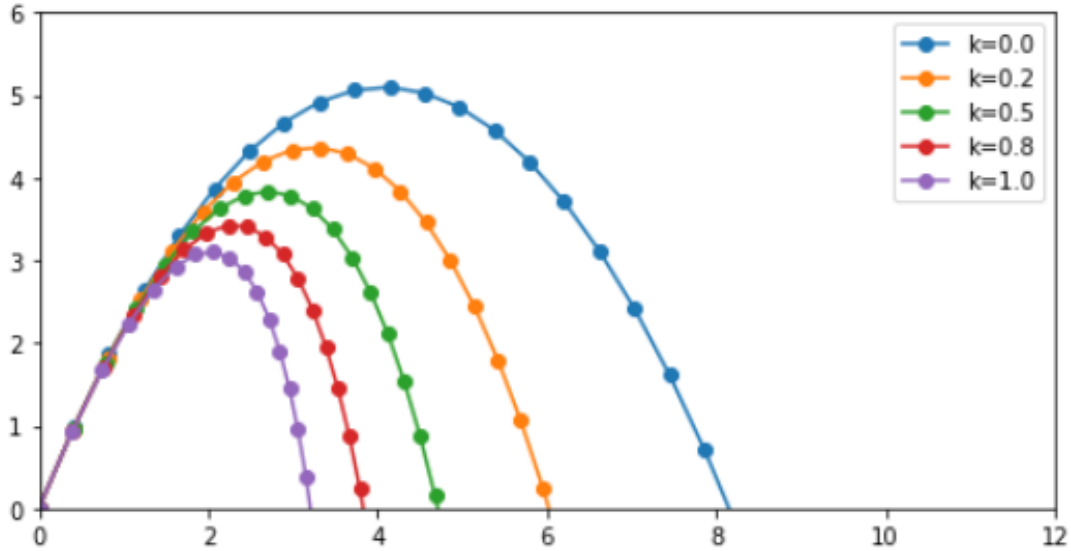
- Introduce and understand dynamical flows
- Model trajectory and understand how changes in the initial condition affects that model

Why study this?

Many real world systems are multidimensional and continuous. For example, the model the flow of water, one might need the temperature, the particles location, the air pressure, it's velocity and acceleration, and a whole host of other parameters that cannot be modelled in 1 or even 2 dimensions quite right. The application we studied was in the use of projectile motion and trajectories.

Projectile Motion

Our lab simulated different flight paths by solving the differential equations that arise when applying newton's laws to this case. Below are some examples of the flight paths that we encountered.



Conclusion

In conclusion, it is clear that the system doesn't behave chaotically and we were able to model this continuous phenomena by solving differential equations and applying the laws of physics. Such a system could be used in other more complicated situations.