Outline

Introduction

three species food chain, L-V equations, history, all that jazz, analogies to chemistry

Make an example of a three species food chain, then take z out of it and talk about the standard L-V equations, then add z and see what changes

Phase Portraits

Explanation of what they are

z = 0, two species normal L-V equations

1. all values at 1
2. maybe show the influence of different values on how the graph looks?
3. talk about the three special cases: equal point, x = 0, y = 0, x = y = 0

- what are they, study their aspects with phase portraits and then back it up with actual maths
- discuss limitations of this model

z not equal 0, three species food chain

1. all values at 1
2. three cases that happen here
3. maybe show the influence of different values on how the graph looks?
4. talk about the three special cases: equal point, x = 0, y = 0, x = y = 0

- what is this, all the special behavior of this one, back it up with maths
- discuss limitations of this model

Conclusion

how useful are phase spaces? Aren't L-V equations cool?