
HW 02 - Nonlinear Systems Simulation

Table of Contents

Document Information:	1
HW 01 - Nonlinear Systems Simulation:	1
Van der Pol Oscillator:	1

Document Information:

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- Date: 09/14/2021
- Title: HW 02 - Nonlinear Systems Simulation
- Term: Fall 2021
- Class: EE 5323 - Nonlinear Systems
- Dr. Lewis

HW 01 - Nonlinear Systems Simulation:

1. Duffing's Equation
2. Lozenz Attractor Chaotic System
3. Voltera Predator-Prey System

Van der Pol Oscillator:

Duffing's equation is interesting in that it exhibits bifurcation, or dependence of stability properties and number of equilibrium points on a parameter. The undamped Duffing equation is $\ddot{x} + \alpha x + x^3 = 0$ with $x(0)=0.2$ as initial conditions. # ITEM1 # ITEM2 * Plot $y(t)$ vs. t . * *Plot the phase plane plot $y'(t)$ vs. $y(t)$* .

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 $\ddot{x} + \alpha x + x^3 = 0$ as initial conditions. # ITEM1 # ITEM2 * Plot $y(t)$

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 $\ddot{x} + \alpha x + x^3 = 0$

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