

ANALYSIS OF DYNAMICAL SYSTEMS

Variant 20

Part 1: Liénard equation

Analyse 2-D system.

$$\ddot{x} - (\mu - x^2)\dot{x} + x = 0,$$

where μ is a constant.

Parameter	version 20.1	version 20.2
μ	-0.33	1.0

Part 2: Chen attractor

Determine whether the following 3-D system represents a strange attractor or not.

$$\begin{cases} \dot{x} = a(y - x), \\ \dot{y} = (c - a)x - xz + cy, \\ \dot{z} = xy - bz, \end{cases}$$

where the constants have values $a = 35$, $b = 3$, $c = 28$.