

Model Documentation of the Roessler Attractor - Equation 1 of 1979

1 Nomenclature

1.1 Nomenclature for Model Equations

a, b, c constants

2 Model Equations

State Vector and Input Vector:

$$\underline{x} = (x_1 \ x_2 \ x_3) = (x \ y \ z)^T$$
$$\underline{u} = \emptyset$$

Model Equations:

$$\dot{x}_1 = -y - z \tag{1a}$$

$$\dot{x}_2 = x + ay \tag{1b}$$

$$\dot{x}_3 = bx - cz + xz \tag{1c}$$

Parameters: a, b, c

Outputs: $\langle not \ defined \rangle$

2.1 Exemplary parameter values

Symbol	Value
a	0.38
b	0.3
c	4.84

3 Derivation and Explanation

The Roessler Attractor is a purely academic model. It is not based on an existing physical system.

4 Simulation

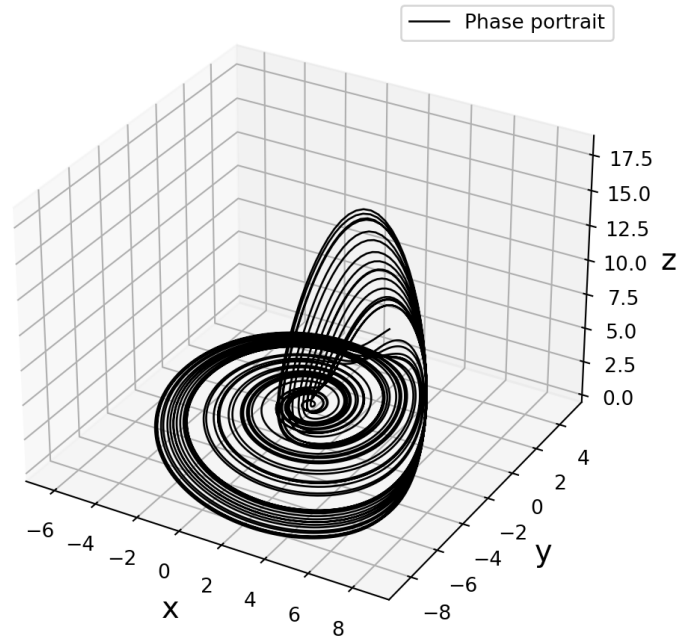


Figure 1: Simulation of the Roessler Attractor.

References

- [1] Roessler, O. E.: *Continuous chaos - four prototype equations*, Ann. NY Acad. Sci. 316, p. 381, 1979.
- [2] Gaspard, P.: *Roessler Systems*, *Encyclopedia of Nonlinear Science*, pp. 808-811, New York, 2005.