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: *⟨not defined⟩*

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 an exisiting physical system.

4 Simulation

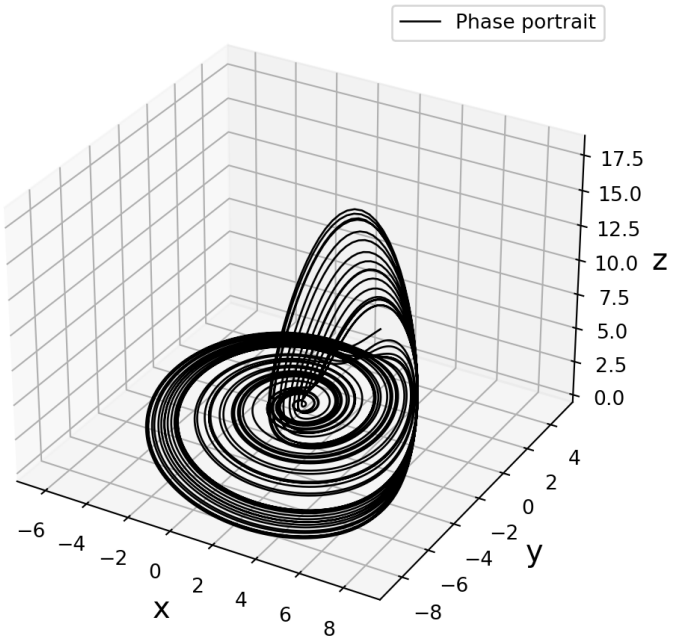

Figure 1: Simulation of the Roessler Attractor.

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.