The Rössler System

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In 1976, Otto Rössler proposed a system of nonlinear ordinary differential equations that illustrated the simplest possible strange attractor. An attractor is a set of values towards which a system moves when initial conditions are *near* the attractor; to call an attractor strange means that the attractor exhibits fractal behavior. Often, strange attractors are associated with chaotic systems. Rössler's strange attractor is a chaotic attractor that solves his proposed system

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

$$\dot{y} = x + ay \tag{2}$$

$$\dot{z} = b + z(x - c) \tag{3}$$

where a, b, and c are arbitrary values. Rössler studied the effects that small (i.e. less than 1) a and b paired with a relatively large c had on the system's chaotic behavior.