$$\begin{cases} \frac{dx_1}{dt} = -x_2 + x_1(x_1^2 + x_2^2)^{-\frac{1}{2}}(1 - x_1^2 - x_2^2) \\ \frac{dx_2}{dt} = x_1 + x_2(x_1^2 + x_2^2)^{-\frac{1}{2}}(1 - x_1^2 - x_2^2) \end{cases}$$

$x_1 = \rho\cos(\theta)$ e $x_2 = \rho\operatorname{sen}(\theta)$

$$-\rho\sin\theta + \rho\cos\theta\,(\rho^2)^{1/2}(1-\rho^2) \quad , \quad \rho\cos\theta + \rho\sin\theta\,(\rho^2)^{1/2}(1-\rho^2)$$

$$\begin{cases} (1-\rho^2)\cos\theta - \rho\sin\theta = \dfrac{d(\rho\cos\theta)}{dt} = \rho\sin\theta\dfrac{d\theta}{dt} + \cos\theta\dfrac{d\rho}{dt} & \times\cos\theta \\ (1-\rho^2)\sin\theta + \rho\cos\theta = \dfrac{d(\rho\sin\theta)}{dt} = \rho\cos\theta\dfrac{d\theta}{dt} + \sin\theta\dfrac{d\rho}{dt} & \times\sin\theta \end{cases} \quad +$$

$$(1-\rho^2)(\cos^2\theta + \sin^2\theta) - \rho\sin\theta\cos\theta + \rho\cos\theta\sin\theta = -\rho\sin\theta\cos\theta\frac{d\theta}{dt} + \rho\sin\theta\cos\theta\frac{d\theta}{dt} + \frac{d\rho}{dt}(\cos^2\theta + \sin^2\theta)$$

$$\begin{cases} 1-\rho^2 = \dfrac{d\rho}{dt} \\ 1 = \dfrac{d\theta}{dt} \end{cases}$$

$$\begin{cases} \frac{dx_1}{dt} = -x_2 + x_1(x_1^2 + x_2^2 - 1) \\ \frac{dx_2}{dt} = x_1 + x_2(x_1^2 + x_2^2 - 1) \end{cases}$$

$x_1 = \rho\cos\theta$

$x_2 = \rho\sin\theta$

$$\frac{d\rho}{dt}\cos\theta - \rho\sin\theta\frac{d\theta}{dt} = -\rho\sin\theta + \rho\cos\theta(\rho^2 - 1) \quad \times \cos\theta$$

$+$

$$\frac{d\rho}{dt}\sin\theta + \rho\cos\theta\frac{d\theta}{dt} = \rho\cos\theta + \rho\sin\theta(\rho^2 - 1) \quad \times \sin\theta$$

$$\begin{cases} \frac{d\rho}{dt} = \rho(\rho^2 - 1) \\ \frac{d\theta}{dt} = 1 \end{cases}$$

Salvar