Report of the model SIRS

PropEnfermedades APP

1. Model

Next we show the model used in the simulation.

Description

SIRS model, which represents the spread of an infectious disease in a population considering births and deaths.

Equations

$$\begin{aligned} S' &= -(b * S * I) - (m * S) + (m * N) \\ I' &= (b * S * I) - (v * I) - (m * I) \\ R' &= (v * I) - (m * R) \end{aligned} \tag{1}$$

Parameters

- $m = 0{,}06$.
- $b = 0{,}5$.
- $v = 0{,}2$.

Initial values

The initial values used in the simulation are (The values are normalized respect to 7900000 that is the total population):

- $S_0 = 0{,}999999$.
- $I_0 = 1{,}26582e - 06$.
- $R_0 = 0$.
- $t_0 = 0$.
- $t_f = 150$.
- $dt = 0{,}5$.

Results

The maximum infected population is 1.55102e+06 is reached on day 58. Next we show the results of the simulation using the model SIRS with the parameters and initial values shown above.

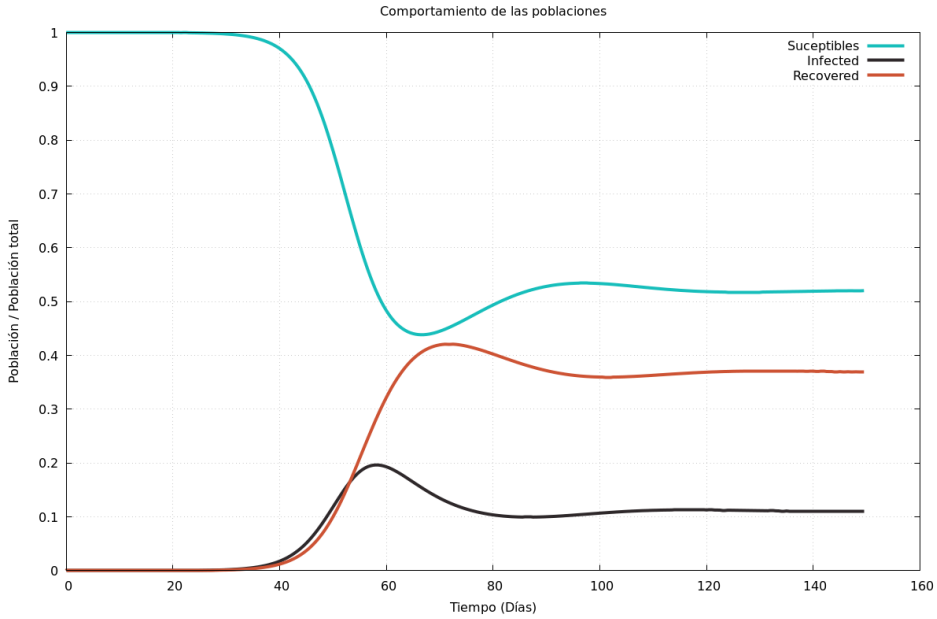

Figura 1: Graph of the model SIRS

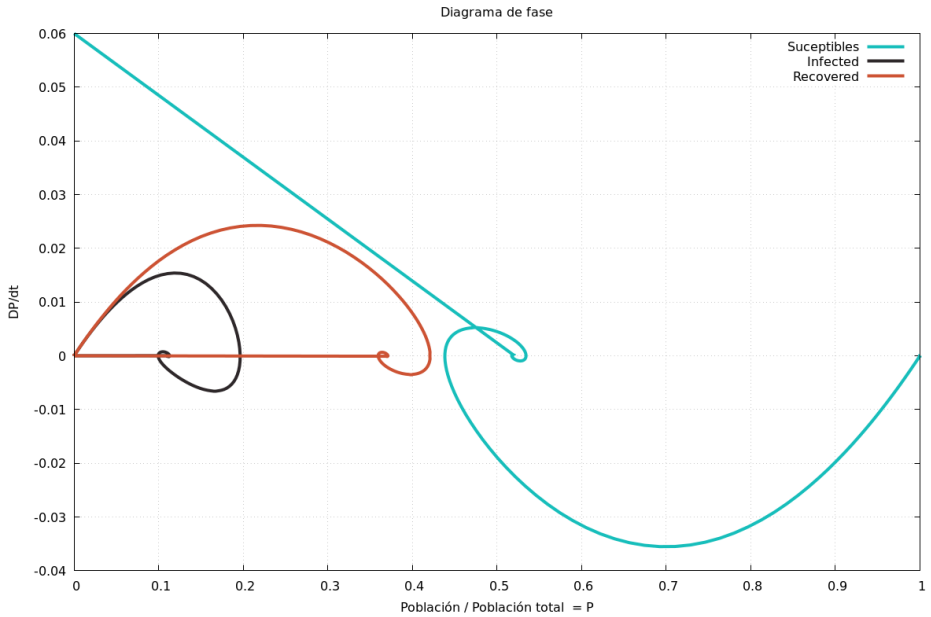

Figura 2: Phase portrait of the model SIRS