Report of the model SIR

PropEnfermedades APP

1. Model

Next we show the model used in the simulation.

Description

SIR model, which represents the spread of an infectious disease in a population.

Equations

$$\begin{aligned} S' &= -b * S * I \\ I' &= b * S * I - k * I \\ R' &= k * I \end{aligned} \tag{1}$$

Parameters

- $b = 1{,}2$.
- $k = 0{,}4$.

Initial values

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

- $S_0 = 0{,}999999$.
- $I_0 = 1{,}26582e - 06$.
- $R_0 = 0$.
- $t_0 = 0$.
- $t_f = 100$.
- $dt = 0{,}5$.

Results

The maximum infected population is 2.45094e+06 is reached on day 18. Next we show the results of the simulation using the model SIR with the parameters and initial values shown above.

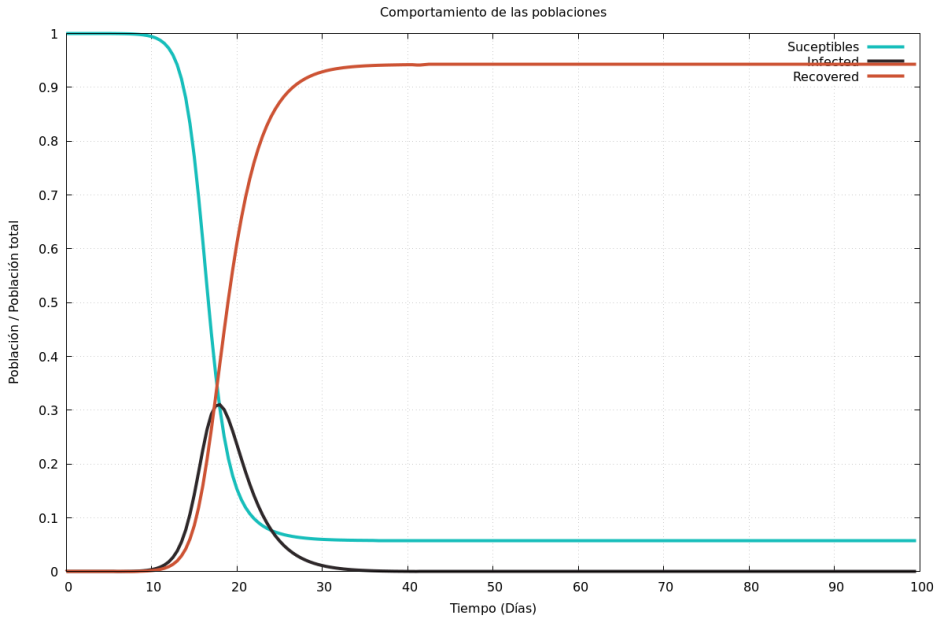

Figura 1: Graph of the model SIR

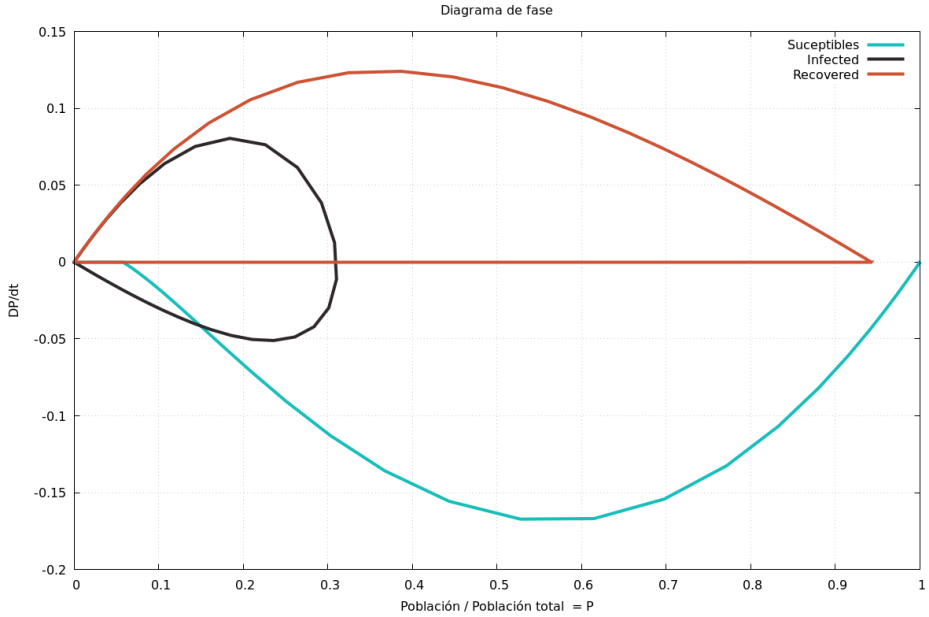

Figura 2: Phase portrait of the model SIR