

[mex14] Host and parasite

The populations of a host $H(t)$ and a parasite $P(t)$ are described by the following equations:

$$\dot{H} = (1 - P)H, \quad \dot{P} = P \left(1 - \frac{2P}{1 + H} \right).$$

Find the three fixed points for $H \geq 0, P \geq 0$ and determine their nature. Sketch the phase diagram and discuss the phase flow.

Solution: