6. Linearization

Linearization

MIT180312016-V027400

0:00 / 8:04 Speed 2.0x

Video

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Using MATLAB to verify nonlinear center behavior

To see if we have unstable spirals, stable spirals, or closed orbits, we solve the systems of ODEs numerically and investigate the results.

1. Login into MATLAB Online using your license from this course (or use a desktop versionR2016b or later).

2. Navigate the Current Folder browser to where you want to save the file.

3. Copy and paste the following code in the MATLAB to download the script:

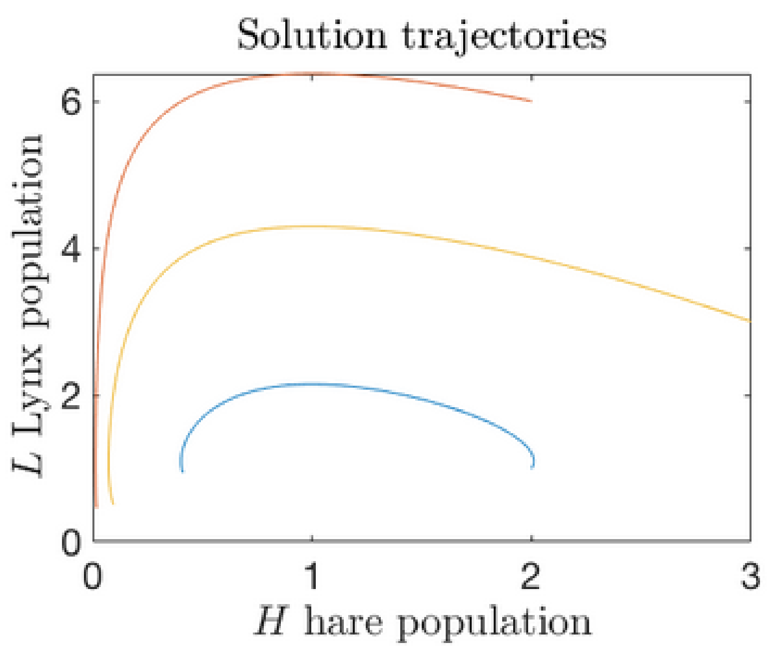
```
url = 'https://courses.edx.org/asset-v1:MITx+18.033x+1T2018+type@asset+block@hareLynx_Example_16b_compatible.mlx';
websave('hareLynx_16b_compatible.mlx', url);
```

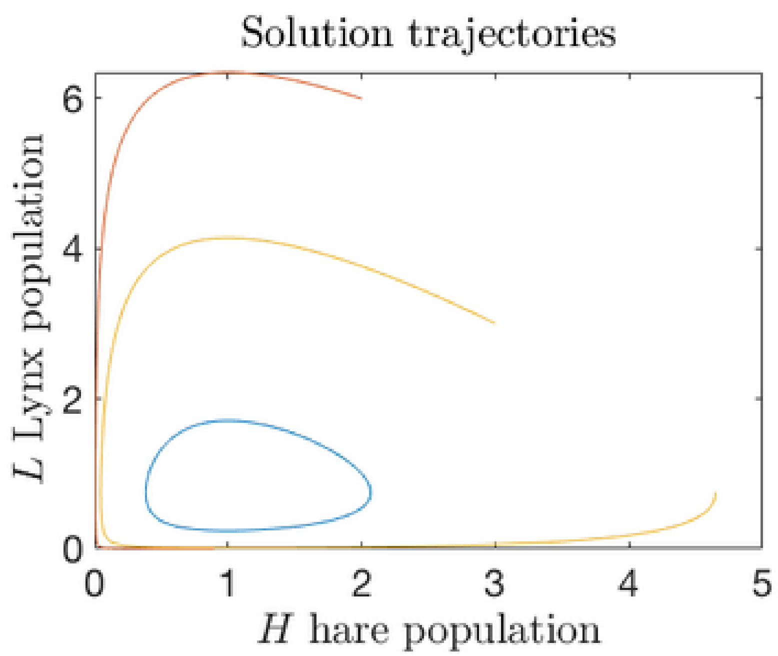
4. Open the live script and follow the instructions provided to begin investigating the solution behavior.

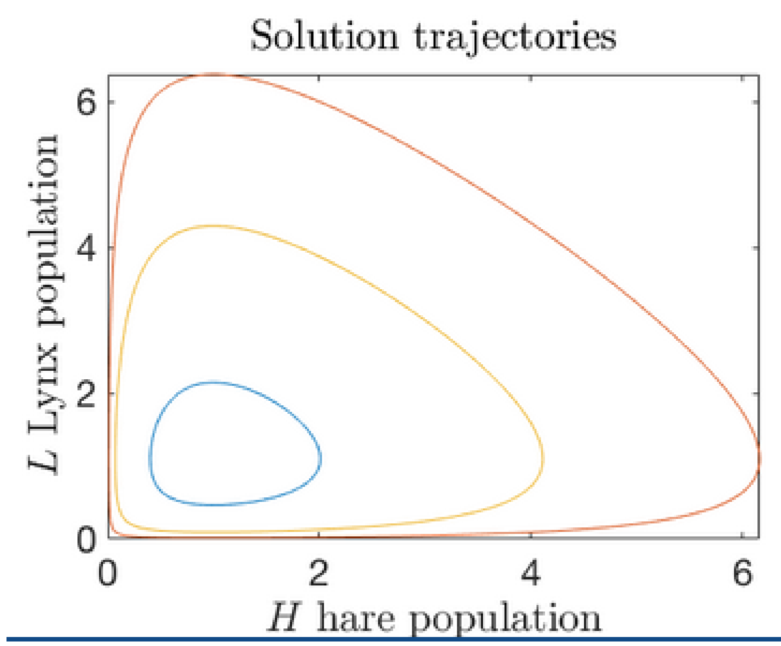
What do you see?

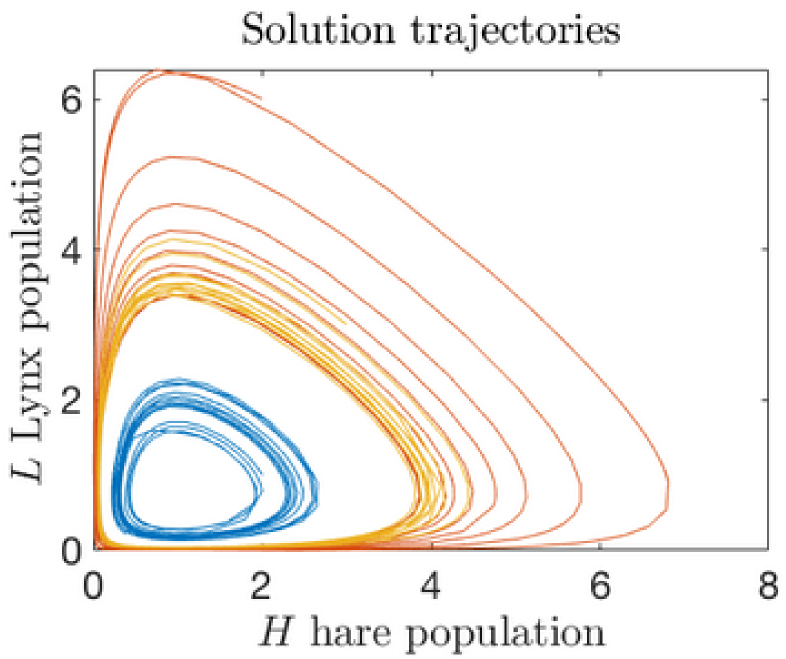
1 point possible (graded, results hidden)

In the live script, adjust the initial conditions to **IC_1 = [2; 1], IC_2 = [2;6], IC_3=[3; 3]**, **tspan = [0,10]** and **a=0.75**. Which plot shows the result?




Solution trajectories
L Lynx population
H hare population
0
1
2
3
4
5
0
2
4
6


Solution trajectories
L Lynx population
H hare population
0
2
4
6
0
2
4
6



Submit You have used 1 of 2 attempts

The proof that this system is a nonlinear center is derived in the video below.

Deriving the nonlinear center

MIT180312016-V023700

0:00 / 11:00

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