

Advanced Time Series Analysis: Computer Exercise 3

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Sparring partners:

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Part 1: Simulation and discretization of di usion processes

Question 1a

$$\sigma = 0.00$$

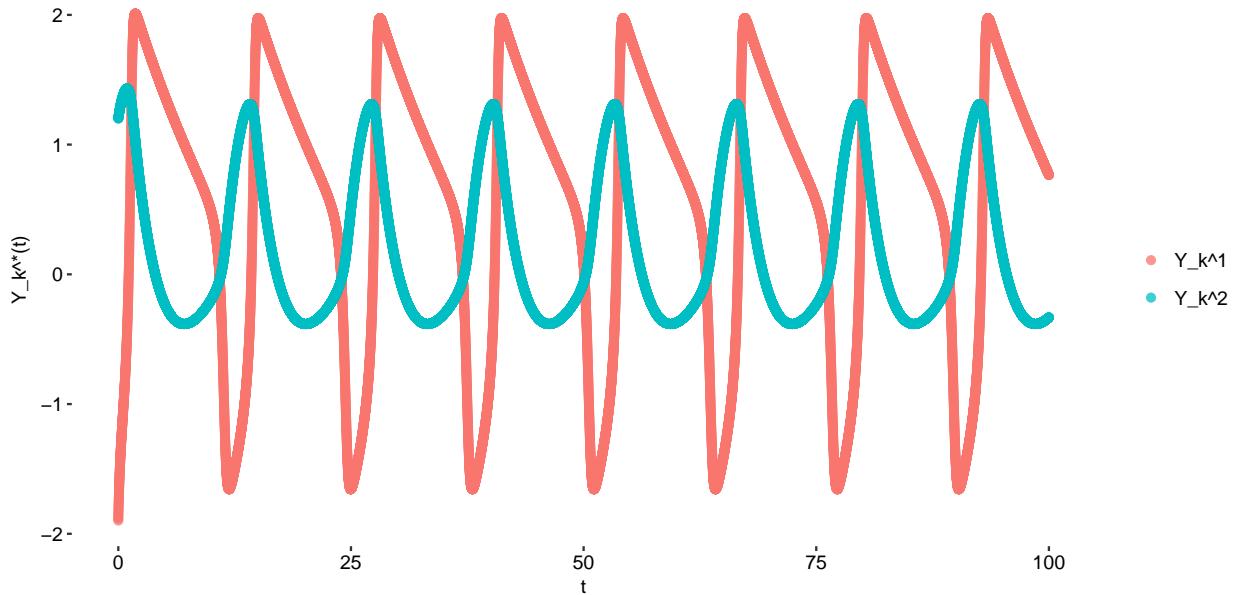


Figure 1: Plot of the simulation realizations with sigma = 0.0.

$$\sigma = 0.10$$

$$\sigma = 0.20$$

$$\sigma = 0.30$$

$$\sigma = 0.40$$

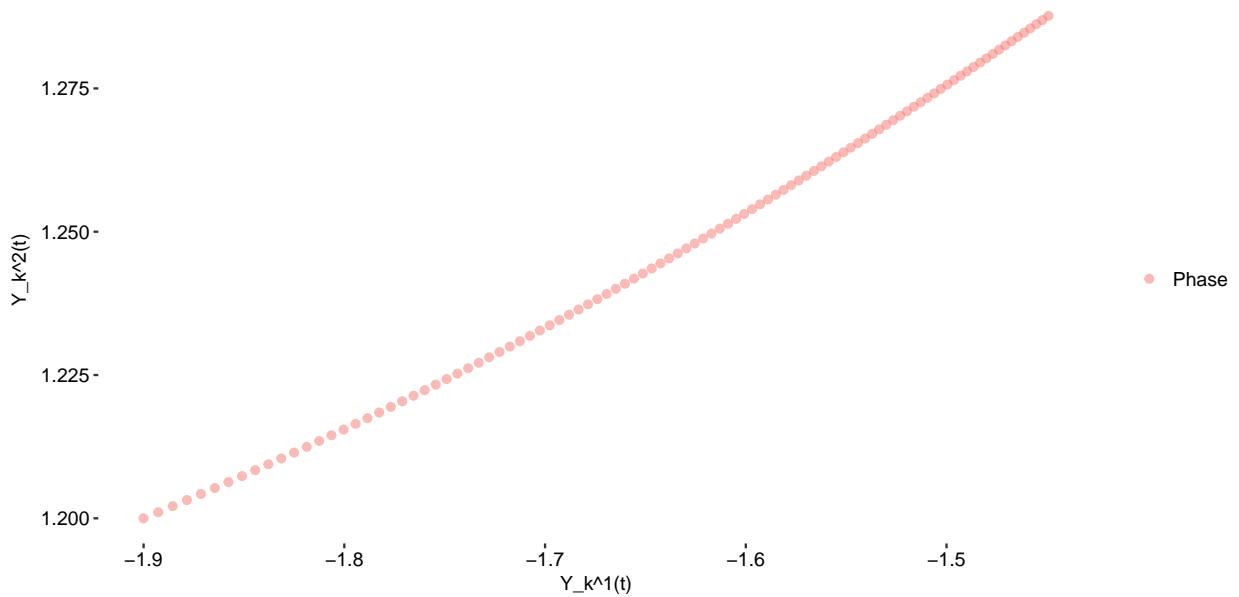


Figure 2: Phase plot of the simulation with $\sigma = 0.0$.

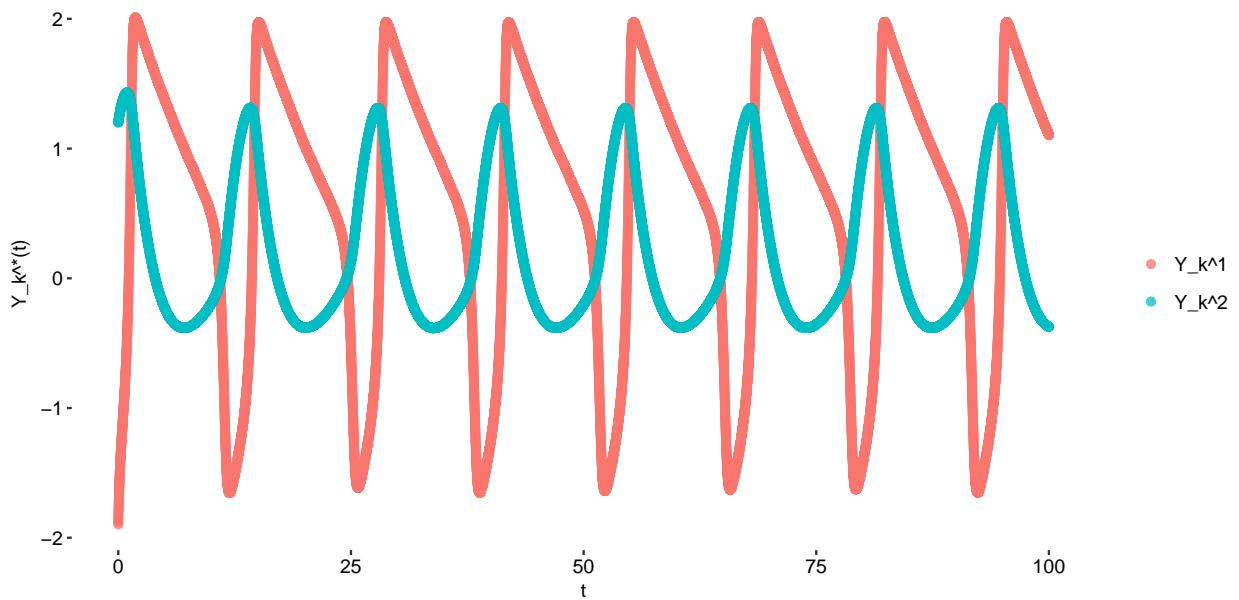


Figure 3: Plot of the simulation realizations with $\sigma = 0.10$.

Comment on the effect of adding noise to the equations

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Question 1b

$$\sigma = 0.10$$

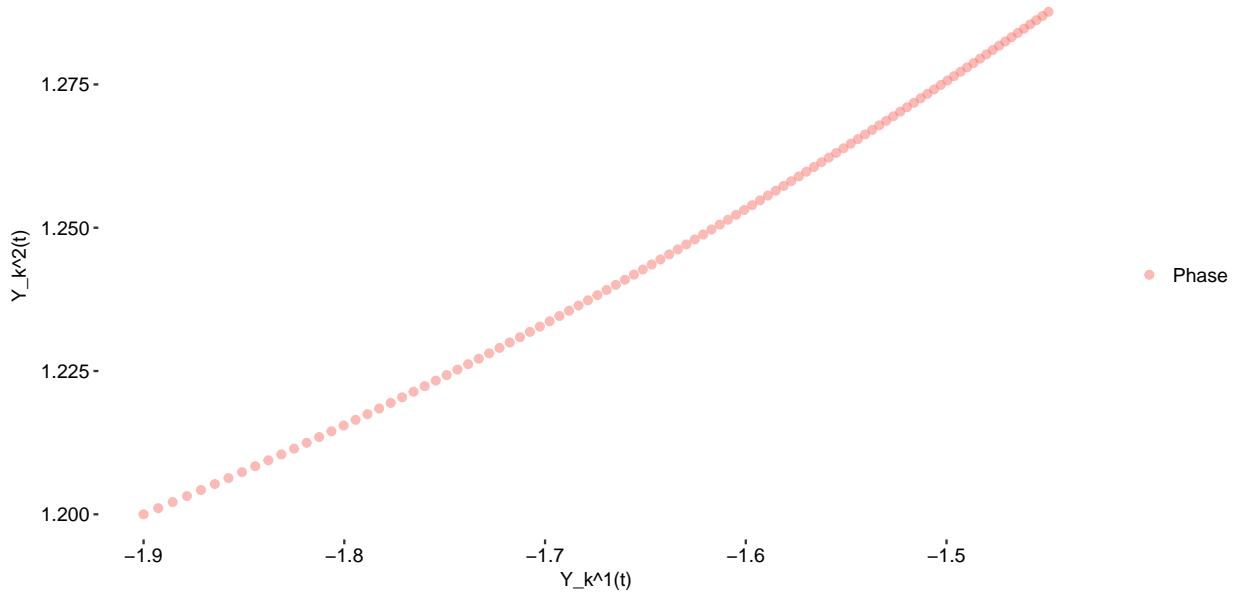


Figure 4: Phase plot of the simulation with $\sigma = 0.10$.

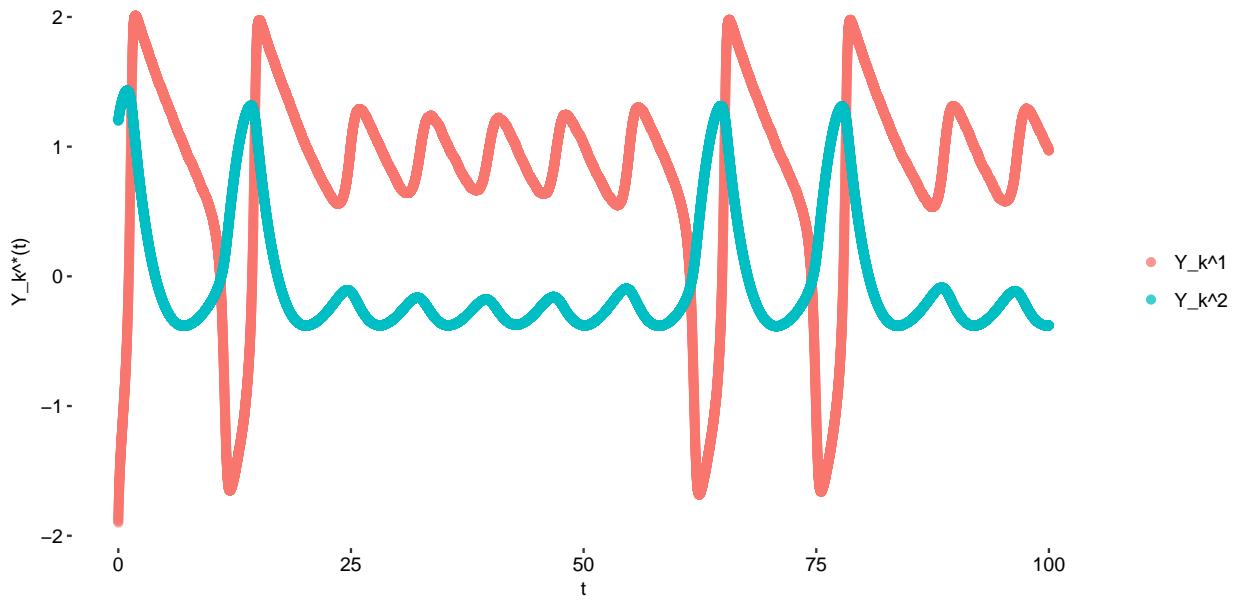


Figure 5: Plot of the simulation realizations with $\sigma = 0.20$.

$\sigma = 0.20$

$\sigma = 0.30$

$\sigma = 0.40$

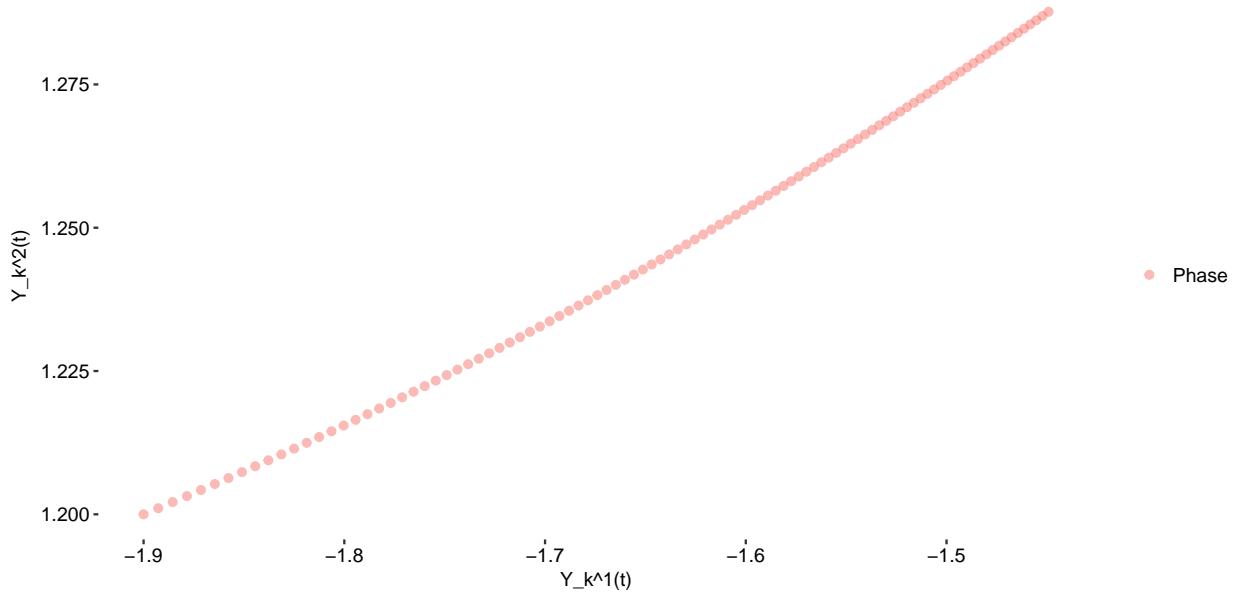


Figure 6: Phase plot of the simulation with $\sigma = 0.20$.

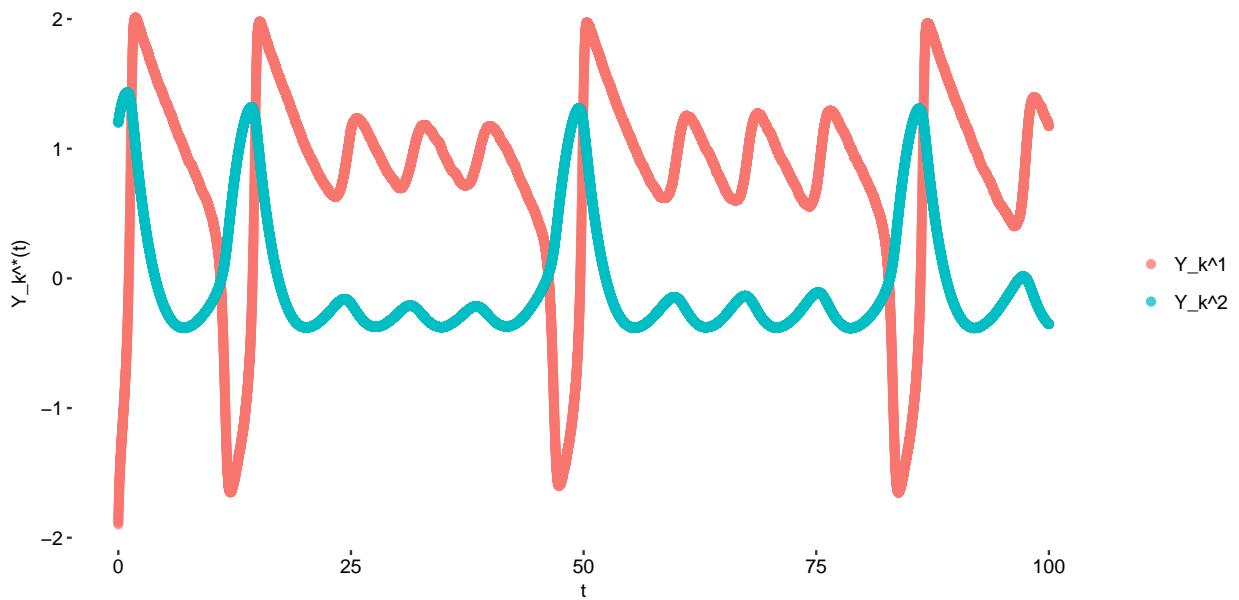


Figure 7: Plot of the simulation realizations with $\sigma = 0.30$.

Which extra information does the plot contain, compared to the standard phase-plot?

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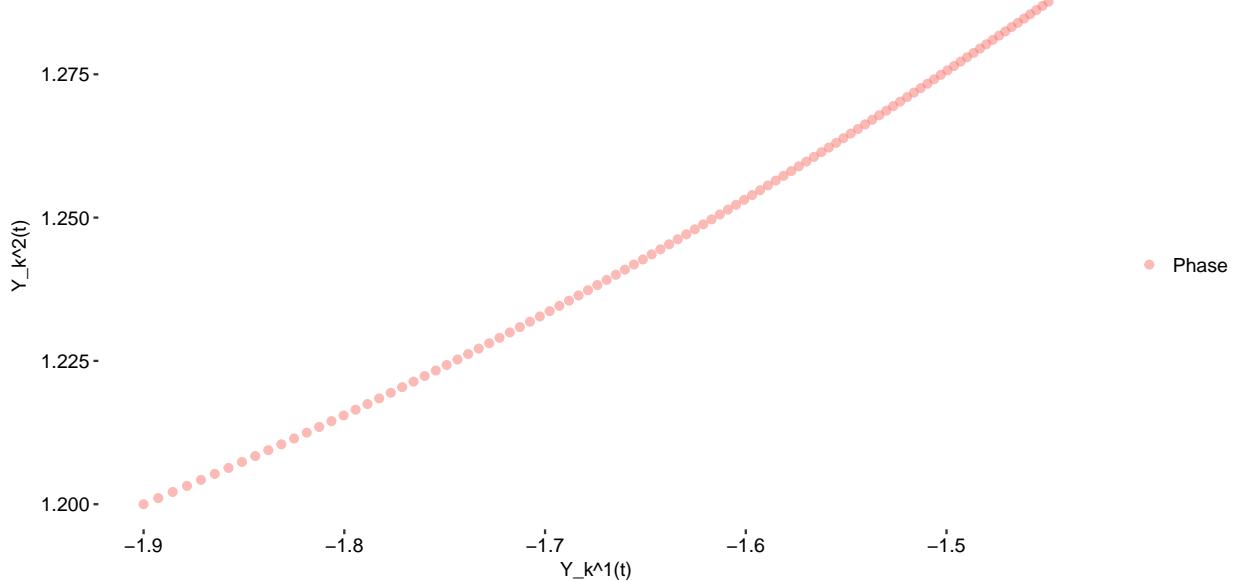


Figure 8: Phase plot of the simulation with $\sigma = 0.30$.

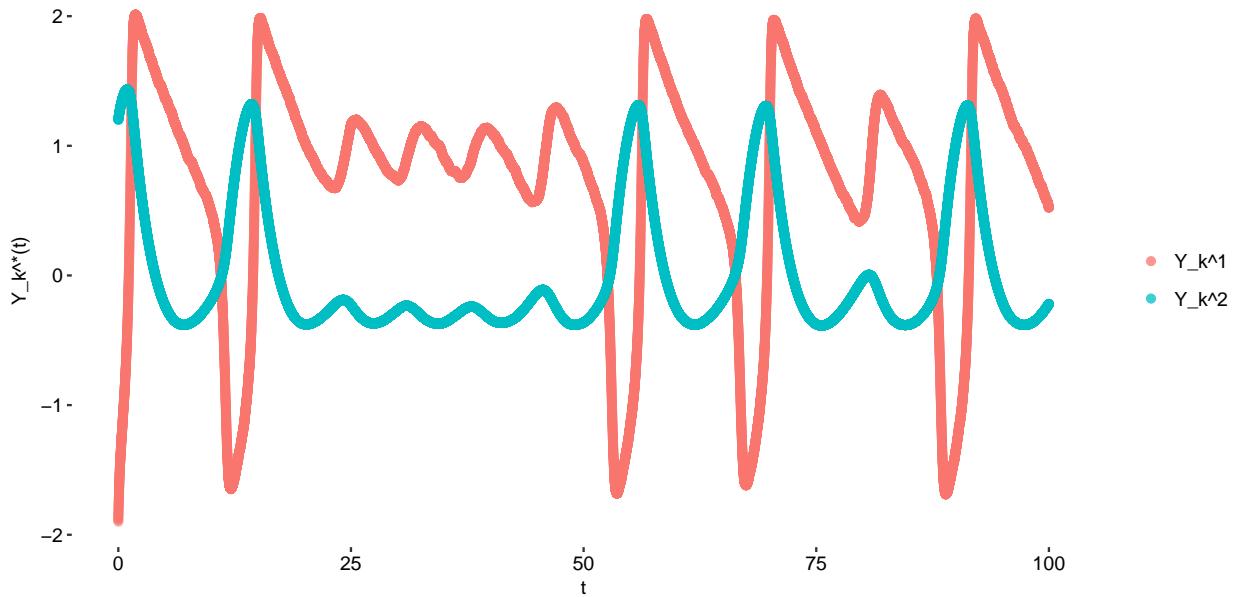


Figure 9: Plot of the simulation realizations with $\sigma = 0.40$.

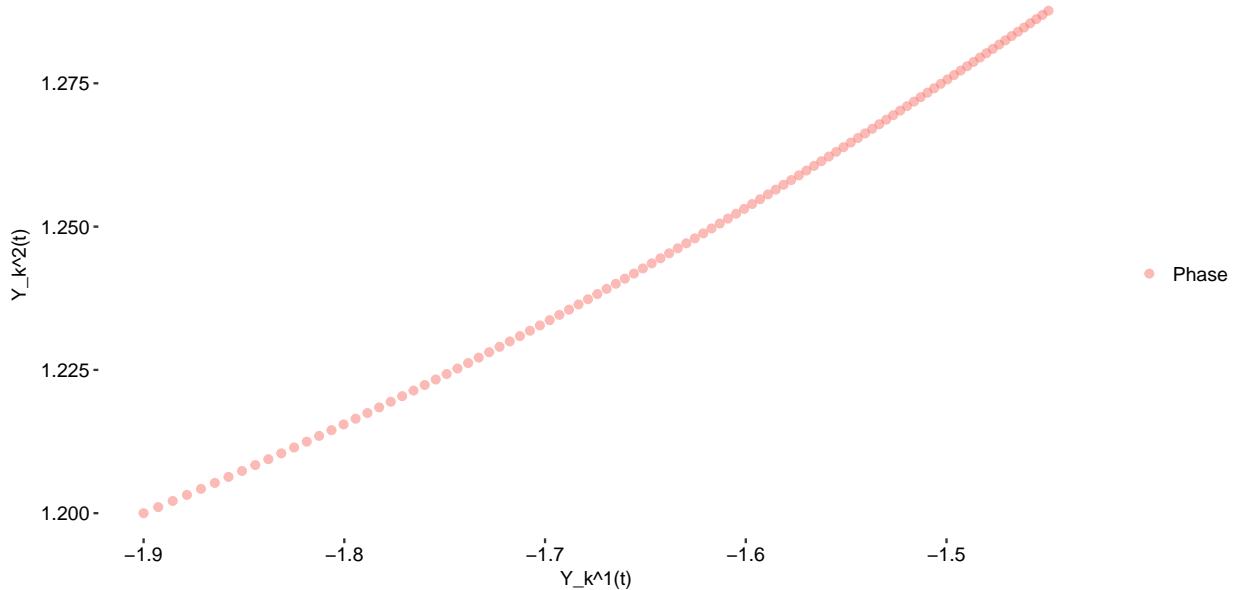


Figure 10: Phase plot of the simulation with $\sigma = 0.40$.

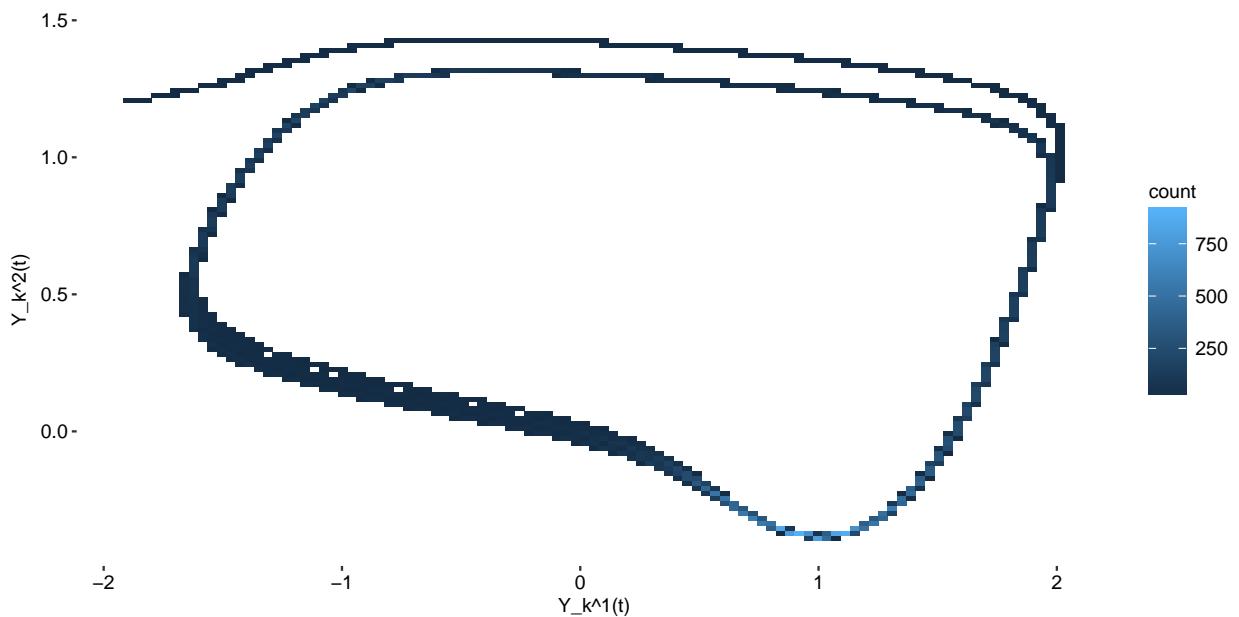


Figure 11: Phase plot of the simulation with $\sigma = 0.10$.

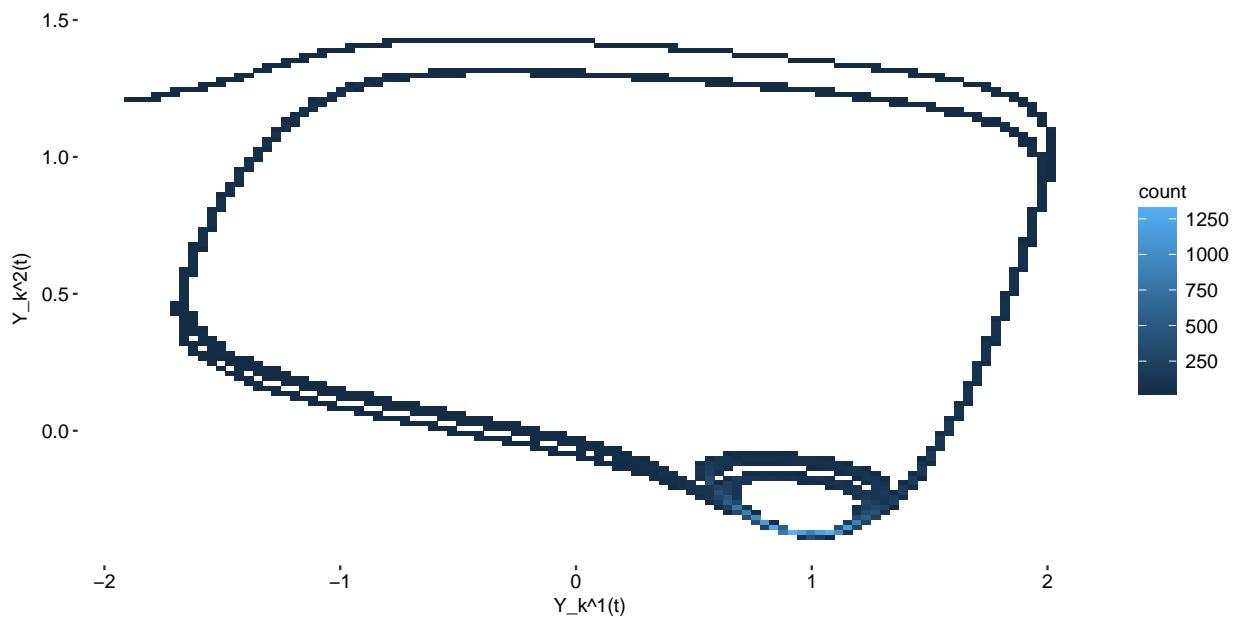


Figure 12: Phase plot of the simulation with $\sigma = 0.20$.

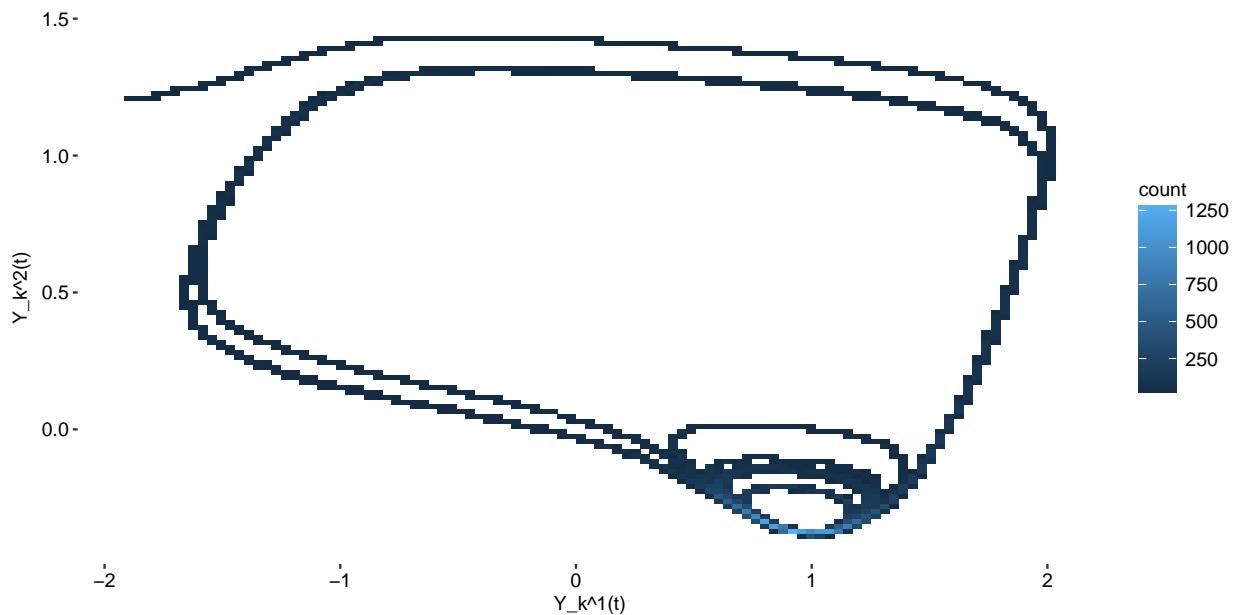


Figure 13: Phase plot of the simulation with $\sigma = 0.30$.

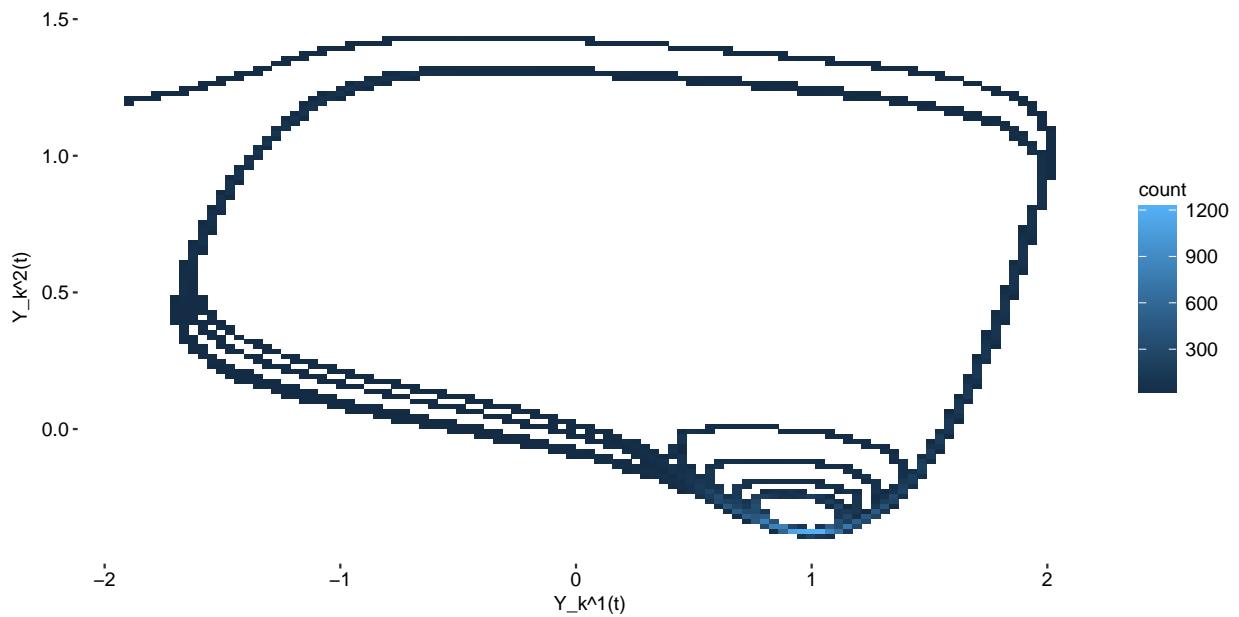


Figure 14: Phase plot of the simulation with $\sigma = 0.40$.