# Molecular Networks 

WS 11/12

## FDS modeling

## Exercise 1

Consider the function $f:\{0,1,2\}^{2} \rightarrow\{0,1,2\}^{2}$ given by the following table.

| $x=\left(x_{1}, x_{2}\right)$ | $f_{1}(x)$ | $f_{2}(x)$ |
| :---: | :---: | :---: |
| $(0,0)$ | 2 | 2 |
| $(0,1)$ | 2 | 2 |
| $(0,2)$ | 1 | 2 |
| $(1,0)$ | 2 | 1 |
| $(1,1)$ | 2 | 1 |
| $(1,2)$ | 0 | 1 |
| $(2,0)$ | 2 | 0 |
| $(2,1)$ | 2 | 2 |
| $(2,2)$ | 0 | 2 |

Construct the synchronous and asynchronous state transition graph and determine the attractors.

## Exercise 2

Read the article Boolean network model predicts cell cycle sequence of fission yeast by M. Davidich and S. Bornholdt (link to be found on the lecture wiki).
(a) Summarize the key points of the model building. What are the simplifying assumptions behind the model?
(b) Summarize the key points of the analysis and the corresponding results.
(c) Summarize the key points of the conclusions drawn from the model analysis. Do you agree with them?

