

Höhere Wahrscheinlichkeitstheorie

Markov Processes

M. Beiglböck, M. Huesmann, S. Källblad

Exercise 1

Which of the following matrices is the exponential of a Q -matrix?

$$(a) \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \quad (b) \begin{pmatrix} 1 & 0 \\ 1 & 0 \end{pmatrix} \quad (c) \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$$

What consequences do your answers have for the discrete-time Markov chains with these transition matrices?

Exercise 2

Give an example of a Q -matrix such that the corresponding Markov chain explodes in finite time. Can you give an example of a Q -matrix such that the Markov chain explodes a.s. before time 42?