# Contents

# Part I.

# Setting the frame

# 1. Introduction to epidemics & networks

Livestock epidemics are a major economic issue.

## 1.1. Epidemics

## 1.2. Complex networks

A review on networks is found in Newman [5]. Analyses of livestock trade networks are in Christley [3] Bigras-Poulin et al. [2]Green et al. [4].

The interplay between aggregation window and spreading potential was analyzed in Bajardi et al. [1].

# 2. Theory

## 2.1. Epidemics

## 2.2. Complex networks

## 2.3. Epidemics on networks

# 3. Outlook

We give a description of temporal networks later.

# Part II.

# Static Networks

# 4. Basics

# 5. Advanced

# Part III.

# Temporal networks

# 6. Introduction

## 6.1. Temporal networks

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## 6.2. Conceptional problems with components in temporal networks

Die Accessibility erlaubt eine Ansicht auf ein temporal network als Ganzes.

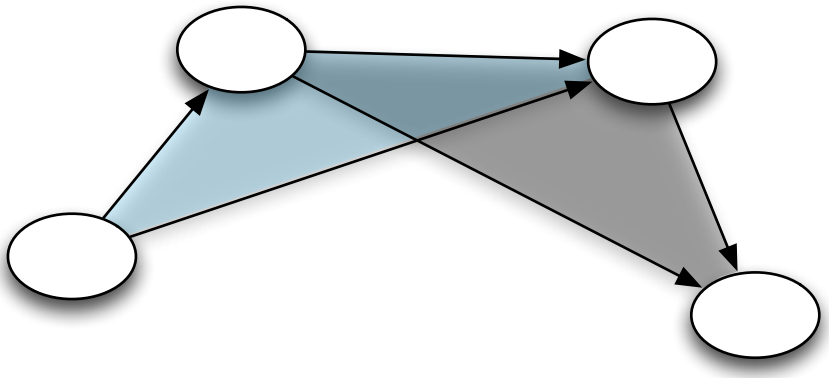

**Figure 6.1..** Overlapping transitive hyperedges.

# Bibliography

[1] Paolo Bajardi, Alain Barrat, Lara Savini, and Vittoria Colizza. Optimizing surveillance for livestock disease spreading through animal movements. *Journal of The Royal Society Interface*, 2012. doi: 10.1098/rsif.2012.0289. URL `http://rsif.royalsocietypublishing.org/content/early/2012/06/21/rsif.2012.0289.abstract`.

[2] Michel Bigras-Poulin, Kristen Barfod, Sten Mortensen, and Matthias Greiner. Relationship of trade patterns of the danish swine industry animal movements network to potential disease spread. *Preventive Veterinary Medicine*, 80:143 – 165, 2007.

[3] R. Christley. Network analysis of cattle movement in great britain. *Proc. Soc. Vet. Epidemiol. Prev. Med.*, pages 234–244, 2005.

[4] D.M Green, I.Z Kiss, and R.R Kao. Modelling the initial spread of foot-and-mouth disease through animal movements. *Proceedings of the Royal Society B: Biological Sciences*, 273(1602):2729–2735, 2006. doi: 10.1098/rspb.2006.3648. URL `http://rspb.royalsocietypublishing.org/content/273/1602/2729.abstract`.

[5] Mark E J Newman. The Structure and Function of Complex Networks. *SIAM Review*, 45(2):167–256, 2003.