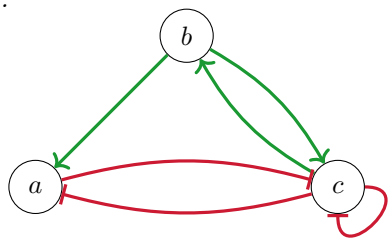
Boolean Networks in Life Sciences
Exercise Sheet 8: Network Inference

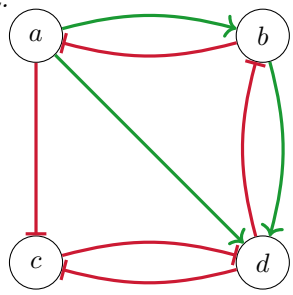
Friday 23rd January, 2026

Exercise 1 *Consider the following interaction graphs and determine the extreme parameters* $p^i_{\omega^+(i)}$ *and* $p^i_{\omega^-(i)}$ *for each variable* $i \in \{a, b, c\}$*, respectively* $i \in \{a, b, c, d\}$*.*

1.



2.



Exercise 2 *Consider the first interaction graph (1.) from Exercise* 1 *and determine the abstract parametrisation set (lower and upper bounds) after each of the following transitions and application of the monotonicity narrowing* Λ_m*:*

$$000 \longrightarrow 100 \longrightarrow 101$$

(Note: only the parameters of the variable changing value need to be considered after each transition, as the rest remains unchanged.)

Exercise 3 *Consider the second interaction graph (2.) from Exercise* 1 *and determine the abstract parametrisation set (lower and upper bounds) after each of the following transitions and application of the monotonicity narrowing* Λ_m*:*

$$1001 \longrightarrow 1000 \longrightarrow 1010 \longrightarrow 1110$$

(Note: only the parameters of the variable changing value need to be considered after each transition, as the rest remains unchanged.)