

## S4 Text

**Biological replicates.** As a default, we consider single time series experiments. Reactionet lasso analysis easily accommodates multiple replicates. Specifically, replicate specific response vectors  $b_k$  and design matrices  $A_k$  for each condition  $k$  are utilized to construct a problem instance by concatenation and apply reactionet lasso as described:

*Matrix concatenation strategy:*

1. Perform bootstrapping of stoichiometric moment function evaluations separately for each of the replicates  $k$ .
2. Construct joint regression problem by concatenation:  
response vector  $b := [b_1 b_2 \dots b_n]$   
design matrix  $A := [A_1 A_2 \dots A_n]$ .
3. Run reactionet lasso on the joint regression problem defined by  $b$  and  $A$ .