

1. Model Form

$$f_i(\beta, x) = \sum_k \beta_k s_{ki}(x) + \varepsilon(x, z, t, j)$$

Network
evolution

Behavioural
evolution

Timing of decisions	Decision rules
Network rate function	Network objective function
Behavioral rate function	Behavioral objective function

- $f_i(\beta, x)$ is the value of the network objective function for actor (i), given:
 - the current set of parameter estimates (β), and
 - state of the network (x).
 - For k effects, represented as s_{ki} , which may be based on
 - the network (x) or
 - individual attributes (z)
 - Estimated with some random disturbance (ε) associated with x, z, t & j
- Which can be formulated (remember ERGM model) as conditional probabilities:

$$\Pr(x(i \rightarrow j) \mid x, z) = \frac{\exp\left(f_i^{\text{net}}(\beta^{\text{net}}, x, z, t, j)\right)}{\sum_{k \in \{1, \dots, N\}} \exp\left(f_i^{\text{net}}(\beta^{\text{net}}, x, z, t, k)\right)}$$
- Where:
 - $x(i \rightarrow j)$ is the network obtained from x by changing tie to actor j ;
 - $x(i \rightarrow i)$ formally stands for keeping the network as is