

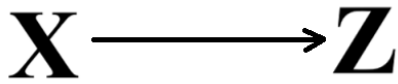
# SIMULATION OF NETWORK MOTIFS COMMONLY OBSERVED IN GENE REGULATORY CIRCUITS

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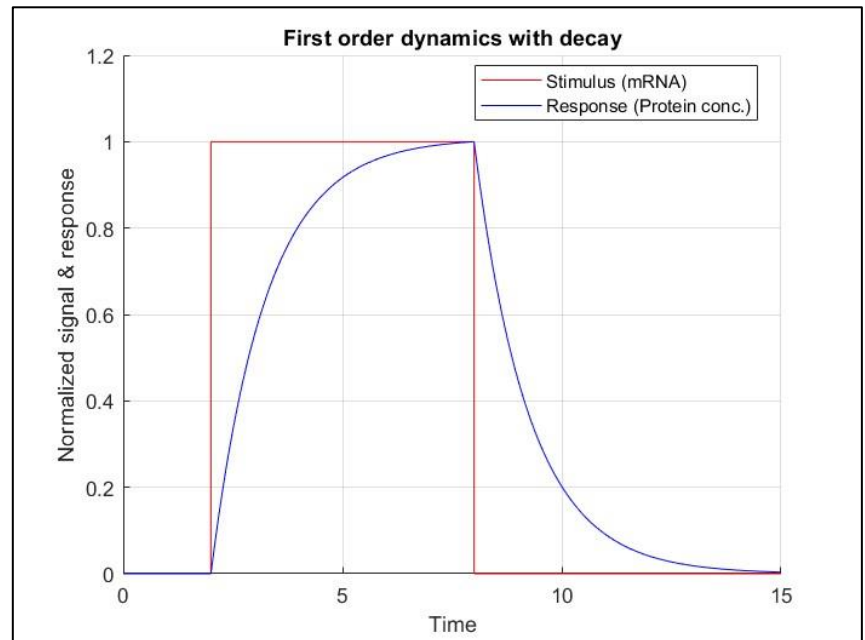
Source code - [Github](#)

## 1. Simple First Order system with decay

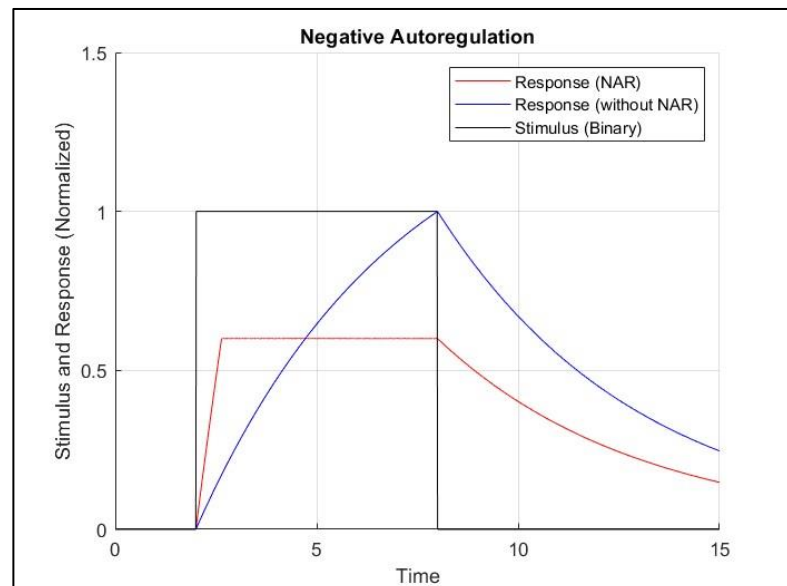
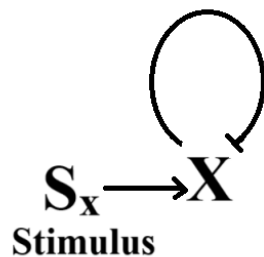


$$x(t) = \begin{cases} \beta & t_1 < 0 < t_2 \\ 0 & \text{otherwise} \end{cases}$$

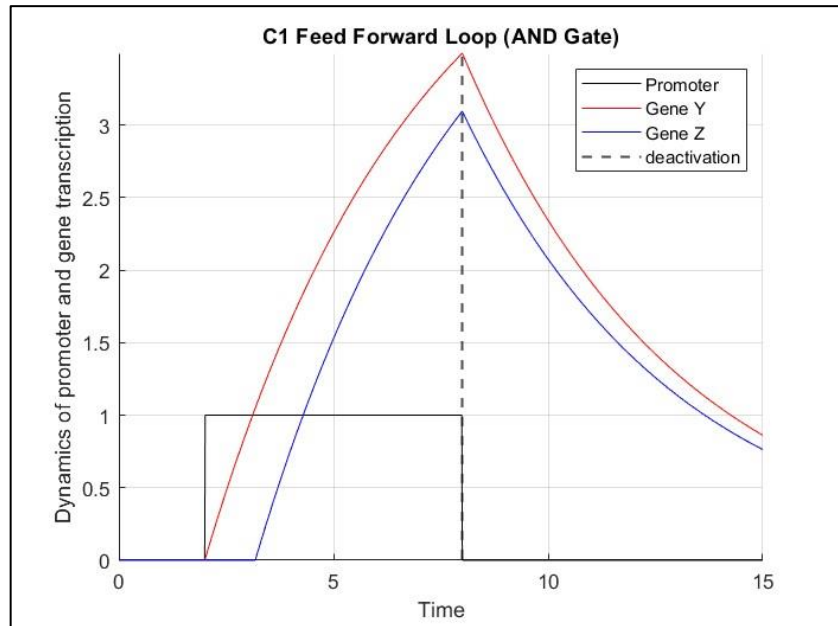
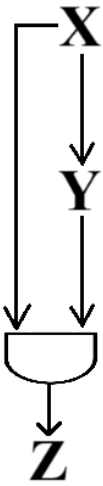
$$\frac{dz}{dt} = x(t) - \alpha \cdot z(t)$$



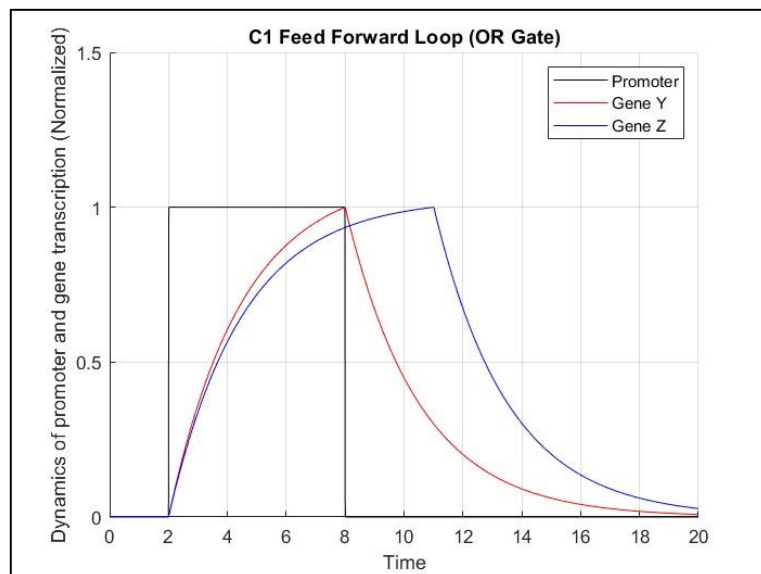
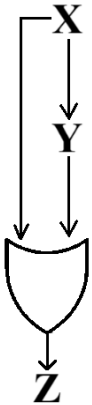
## 2. Negative Autoregulation (NAR)



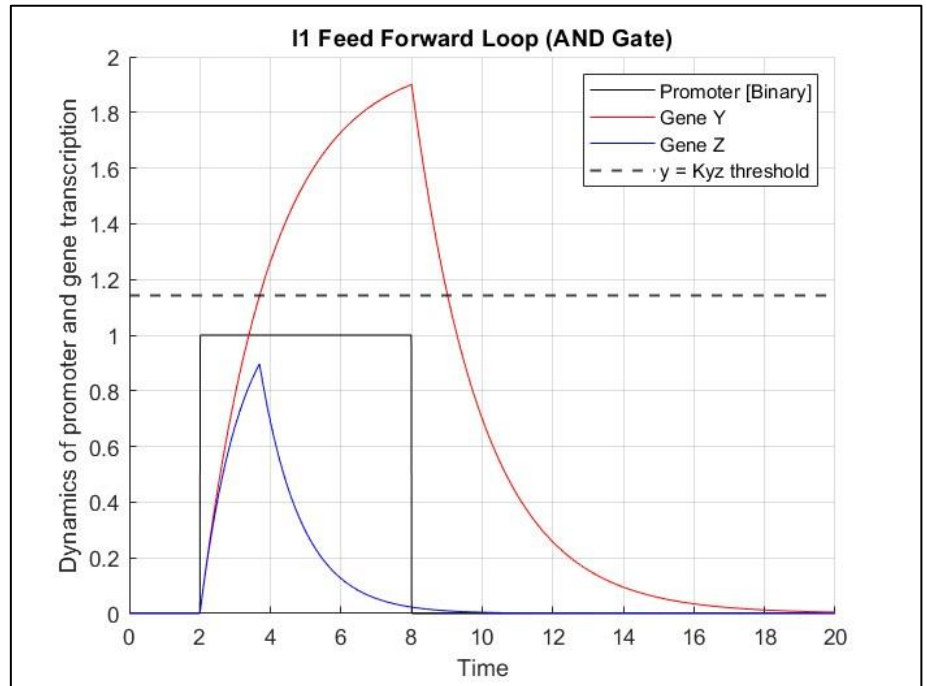
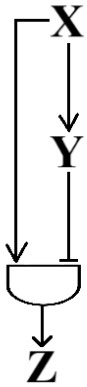
### 3. Coherent 1 – Feed Forward Loop (C1-FFL) with AND gate



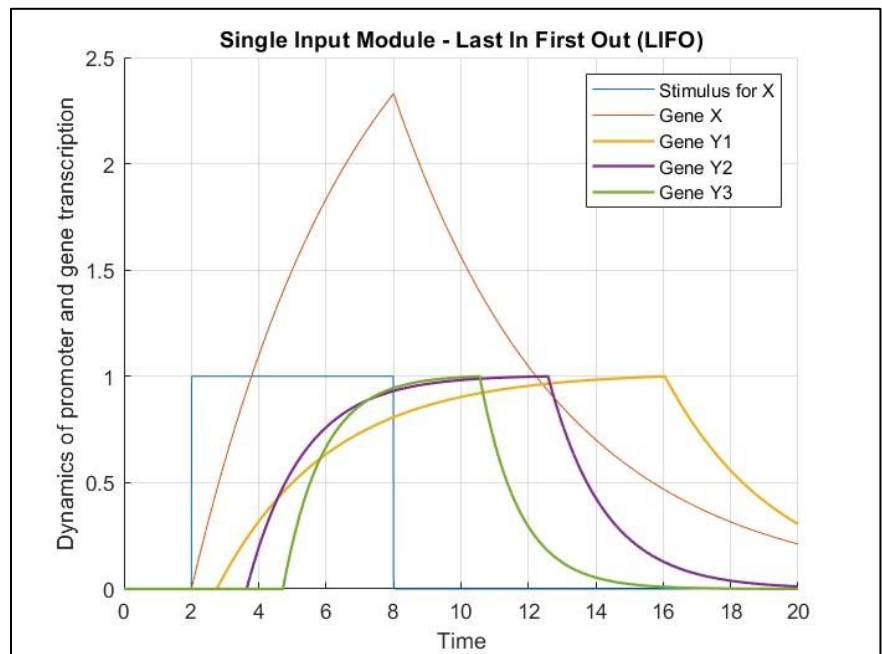
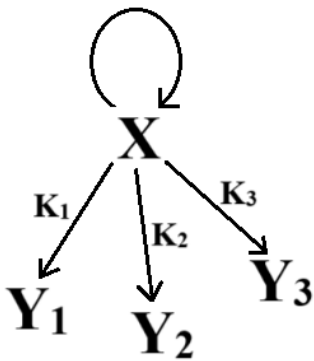
### 4. C1 – Feed Forward loop with OR Gate



## 5. Incoherent 1 – Feed forward loop



## 6. Single Input Module (SIM)



## 7. Complex Network motif with multiple FFL's (Simplified representation of *bacterial sporulation circuit*)

