a Control Action: $u = k z_6$
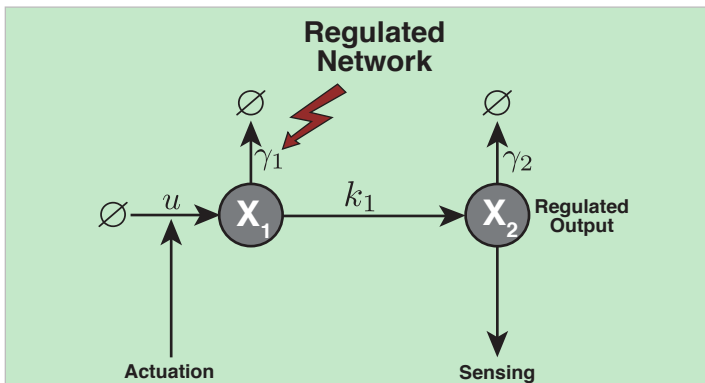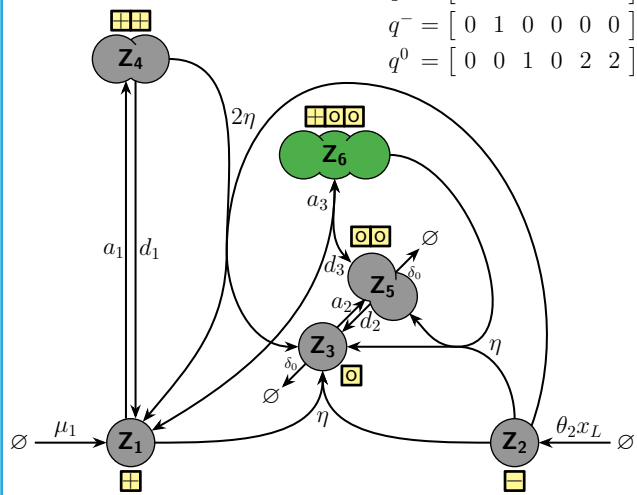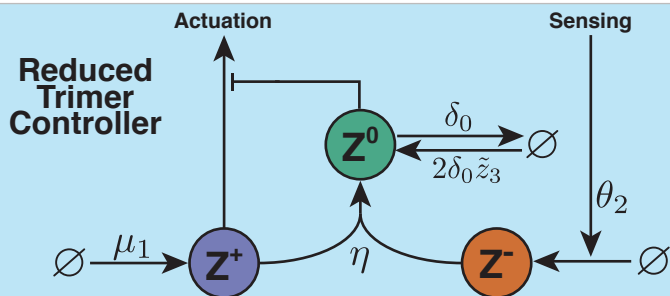
$$q^+ = \begin{bmatrix} 1 & 0 & 0 & 2 & 0 & 1 \end{bmatrix}^T$$
$$q^- = \begin{bmatrix} 0 & 1 & 0 & 0 & 0 & 0 \end{bmatrix}^T$$
$$q^0 = \begin{bmatrix} 0 & 0 & 1 & 0 & 2 & 2 \end{bmatrix}^T$$

Regulated Network

Regulated Output

Actuation

Sensing

b Reduced Trimer Controller

Actuation

Sensing

Control Action
$$u = \mathcal{U}(z^+, z^0)$$
$$= k\tilde{z}_3$$

Algebraic Equations
$$\begin{cases} (z^+ - 2\tilde{z}_1 - \tilde{z}_3)^2 = \kappa_1 \tilde{z}_1 \\ (z^0 - 2\tilde{z}_2 - 2\tilde{z}_3)^2 = \kappa_2 \tilde{z}_2 \\ \tilde{z}_2(z^+ - 2\tilde{z}_1 - \tilde{z}_3) = \kappa_3 \tilde{z}_3. \end{cases}$$

c

$\mathbf{X_2}$ (Regulated Output)

$\mathbf{Z^+ = Z_1 + 2\,Z_4 + Z_6}$

$\mathbf{Z^- = Z_2}$

$\gamma_2 = 0.1$
$\gamma_2 = 0.3$
$\gamma_2 = 0.5$
$\gamma_2 = 1$

$\mathbf{Z^0 = Z_3 + 2\,Z_5 + 2\,Z_6}$

Full Model
Reduced Model

Concentration

Time