



$$\begin{bmatrix} \dot{\mathbf{z}} \\ \dot{\mathbf{y}} \\ \dot{\mathbf{y}}^{gd} \\ \dot{x} \\ \dot{v} \end{bmatrix} = \begin{bmatrix} (\alpha_y(\beta_y(\mathbf{y}^g - \mathbf{y}) - \mathbf{z}) + v \cdot f(x))/\tau \\ \mathbf{z}/\tau \\ -\alpha_g(\mathbf{y}^g - \mathbf{y}^{gd}) \\ 1/\tau \\ -\alpha_v v(1 - v/v_{\max}) \end{bmatrix}$$

with init. state $\begin{bmatrix} \mathbf{0} \\ \mathbf{y}_0 \\ \mathbf{y}_0 \\ 0 \\ 1 \end{bmatrix}$ and attr. state $\begin{bmatrix} \mathbf{0} \\ \mathbf{y}^g \\ \mathbf{y}^g \\ 1 \\ 0 \end{bmatrix}$

