

MATRIZ EXPONENCIAL

$$\frac{dx(t)}{dt} = a_{11}x(t) + a_{12}y(t)$$

$$\frac{dy(t)}{dt} = a_{21}x(t) + a_{22}y(t)$$

$$S(z) \in \mathcal{DOL}(1) \subset \mathbb{H}$$

$$\frac{d}{dt} \begin{bmatrix} x(t) \\ y(t) \end{bmatrix} = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix} \begin{bmatrix} x(t) \\ y(t) \end{bmatrix} \quad \bar{x}(0) = \begin{bmatrix} c_1 \\ c_2 \end{bmatrix}$$

$$\frac{d}{dt} \bar{x}(t) = A \times \bar{x}(t)$$

$$\bar{x} = e^{At} \times \bar{x}(0)$$

$$e^{At} \Big|_{t=0} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

$$\frac{d}{dt} e^{At} = A \times e^{At}$$

$$\begin{aligned} e^{2t} \Big|_{t=0} &= 1 \\ \frac{d}{dt} e^{2t} &= 2e^{2t} \end{aligned}$$

$$e^{At} = I + At + \frac{A^2}{2!} t^2 + \dots + \frac{A^n}{n!} t^n + \dots$$