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$$m\ddot{x} = -Kx \quad x(t) : \mathbb{R} \rightarrow \mathbb{R}$$

$$\ddot{x} = -\left(\frac{K}{m}\right)x$$

$$\frac{K}{m} = 1 \text{ s}^{-2}$$

$$\underline{X}(t) = \begin{pmatrix} x(t) \\ v(t) \end{pmatrix} \quad \underline{\dot{X}}(t) = \begin{pmatrix} v(t) \\ \dot{v}(t) \end{pmatrix} = \begin{pmatrix} v(t) \\ -\frac{K}{m}x(t) \end{pmatrix}$$

$$\underline{X}(0) = \begin{pmatrix} 1 \text{ m} \\ 0 \text{ m/s} \end{pmatrix}$$

Metodo di Eulero

$$\underline{X}(\cancel{0} + h) = \underline{X}(0) + h \underline{X}'(0) + o(h) =$$

$$\approx \underline{X}(0) + h \underline{X}'(0) =$$

$$= \begin{pmatrix} 1 \text{ m} \\ 0 \text{ m/s} \end{pmatrix} + h \cdot \begin{pmatrix} v(0) \\ -\frac{K}{m}x(0) \end{pmatrix} =$$

$$h = 0,1 \text{ s}$$

$$= \begin{pmatrix} 1 \text{ m} \\ 0 \text{ m/s} \end{pmatrix} + 0,1 \text{ s} \begin{pmatrix} 0 \text{ m/s} \\ -1 \text{ s}^{-2} \cdot 1 \text{ m} \end{pmatrix} =$$

$$= \begin{pmatrix} 1 \text{ m} \\ 0 \text{ m/s} \end{pmatrix} + \begin{pmatrix} 0 \text{ m} \\ -0,1 \text{ m/s} \end{pmatrix} = \begin{pmatrix} 1 \text{ m} \\ -0,1 \text{ m/s} \end{pmatrix}$$