

$$x(0) = 0.5 \quad \dot{x}(0) = \text{speed}(\cos \theta)$$

$$\ddot{x}(0) = -\lambda \dot{x}$$

$$y(0) = 0.5 \quad \dot{y}(0) = \text{speed}(\sin \theta)$$

$$\ddot{y}(0) = -\lambda \dot{y} - mg$$

$$\dot{x} = u$$

$$\dot{u} = -\lambda u$$

$$T = 0.1 \quad \epsilon = 0.06$$

$$\dot{y} = v$$

$$\dot{v} = -\lambda v - mg$$

$$mg = 0.5 \quad \lambda = 0.56$$

$$\text{speed} = 30$$

$$\text{angle} = 45$$

$$x_{n+1} = x_n + \tau u_n$$

$$y_{n+1} = y_n + \tau v_n$$

$$u_{n+1} = u_n + \tau(-\lambda u_n)$$

$$v_{n+1} = v_n + \tau(-\lambda v_n - mg)$$