

120



How can we understand this equation?



W

W

x



$v(x, t)$

$$\begin{bmatrix} \frac{dv_x(t)}{dt} \\ \frac{dv_y(t)}{dt} \end{bmatrix} = \beta \begin{bmatrix} (\mu_x - v_x(t)) \\ (\mu_y - v_y(t)) \end{bmatrix} + \sigma \begin{bmatrix} \frac{dW_{v_x}(t)}{dt} \\ \frac{dW_{v_y}(t)}{dt} \end{bmatrix}$$







—

vx(d)





4x

—

$v_x(t)$

05











—

vx(t)





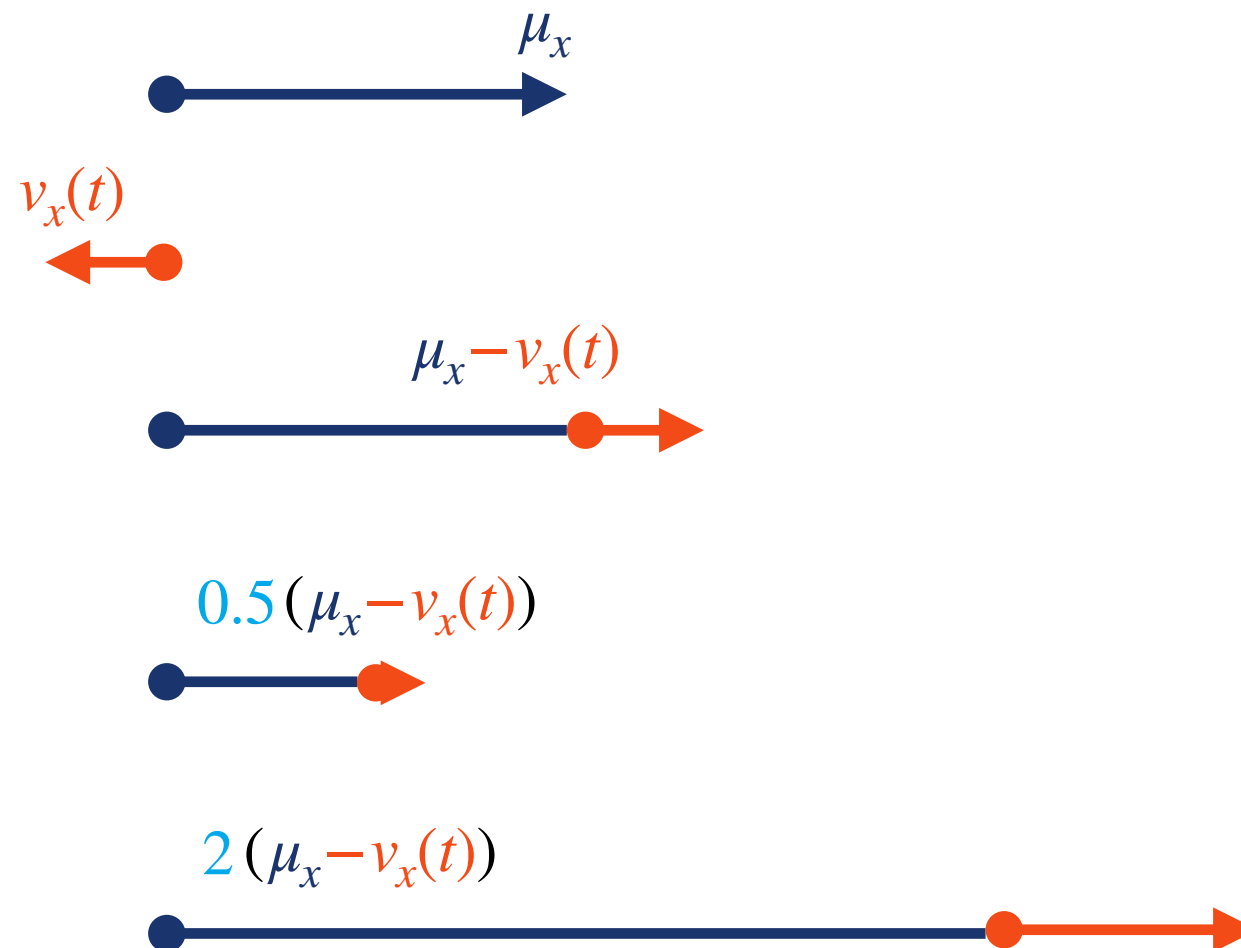


Example in 1d dimension:

How can we understand this equation?

$$\begin{bmatrix} \frac{dv_x(t)}{dt} \\ \frac{dv_y(t)}{dt} \end{bmatrix} = \beta \begin{bmatrix} (\mu_x - v_x(t)) \\ (\mu_y - v_y(t)) \end{bmatrix} + \sigma \begin{bmatrix} \frac{dW_{v_x}(t)}{dt} \\ \frac{dW_{v_y}(t)}{dt} \end{bmatrix}$$

Example in 1 dimension:



How will we specify the mean drift $\{\mu_x, \mu_y\}'$?

We will consider animal movement around a single attraction point $(0,0)$.

