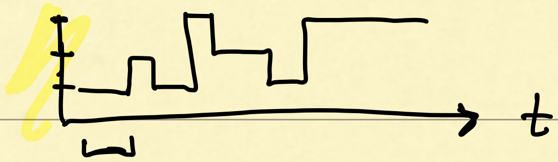
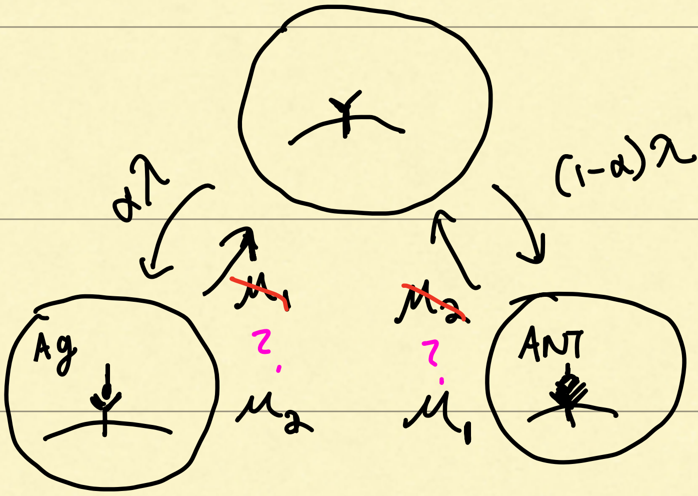
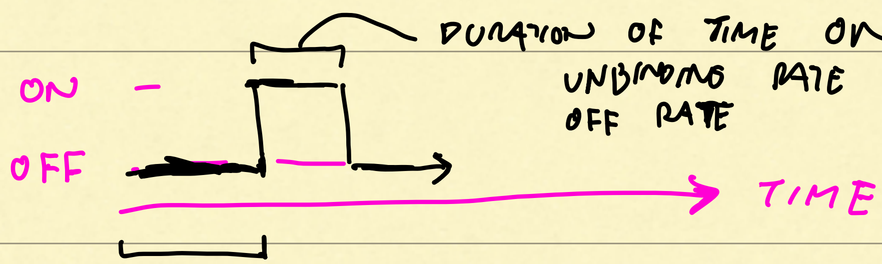


PS5



CHECK $\alpha \to 0$, $\mathbb{P}(Ag) \to 0$



RATE

DURATION OF TIME OFF

BINDING RATE

ON-RATE

CHECK $\mu_1 \to 0$ $\mathbb{P}(ANT) \to 1$

$$\mathbb{P}(FREE) = \frac{1}{\frac{\lambda\alpha}{\mu_2} + \frac{\lambda(1-\alpha)}{\mu_1} + 1}$$ ✓✓

$\mu_1 \to 0$ $\quad\quad$ $\mathbb{P}(\text{FREE}) \to 0$ ✓

$$\mathbb{P}(A_g) = \frac{\frac{\lambda\alpha}{\mu_2}}{\frac{\lambda\alpha}{\mu_2} + \frac{\lambda(1-\alpha)}{\mu_1} + 1}$$

DISCRETE TIME
DISCRETE STATE → CONTINUOUS TIME
DISCRETE STATE

MARKOV CHAIN

POISSON

CONTINUOUS TIME
MARKOV CHAINS

→ CONTINUOUS TIME
CONTINUOUS STATES

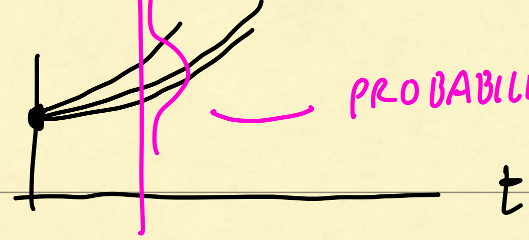
STOCHASTIC
DYNAMICS

STOCHASTIC DIFFERENTIAL
EQUATIONS

$$\frac{dx}{dt} = f(x) + \text{NOISE}$$

$$dx = f(x)dt + \underbrace{\text{NOISE}}$$

HETEROGENEITY



A.K.A

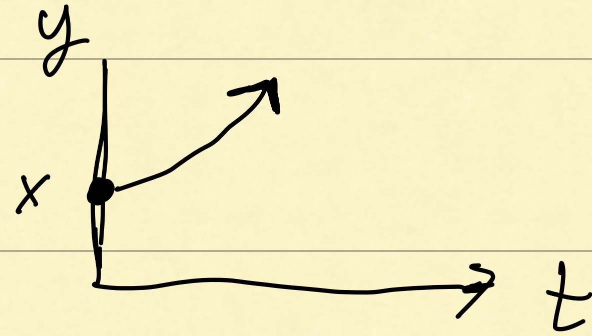
PARAMETRIC NOISE

$$\frac{dx}{dt} = f(x;\theta)$$

RANDOM VARIABLE

EX

$$\frac{dy}{dA} = Ay$$

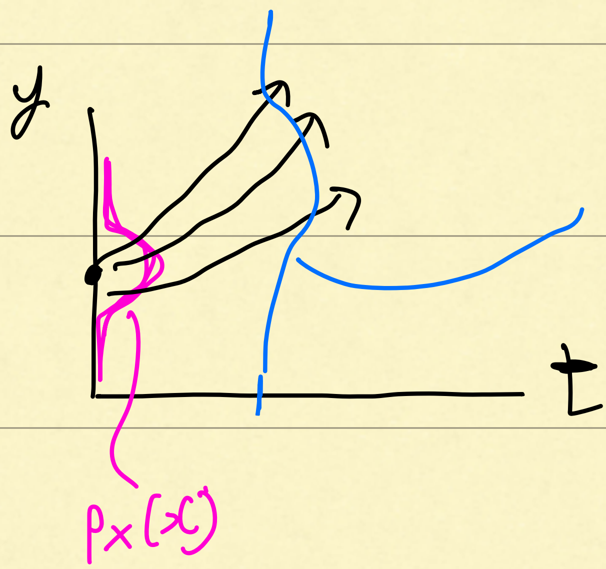


$$y(0) = X$$

$$y(t) = X e^{+At}$$

SUPPOSE $X \sim p_X(x)$

THEN



WHAT IS $p_Y(y;t)$?

ASIDE

SUPPOSE $Y = g(X)$

FUNCTION

RANDOM VARIABLE

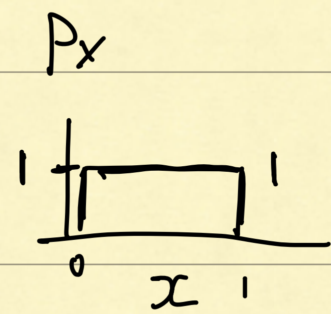
$X \sim p_X(x)$

WHAT IS $p_Y(y)$?

SUPPOSE

$Y = cX$

$X \sim \text{UNIF}(0,1)$



IT IS NOT TRUE THAT

$p_Y(y) = c \, p_X(x)$