Lecture 25

Note Title 3/21/2005

$$W_M^*(t) \simeq mt + a B_H(t)$$

$$m = M \frac{\mu_1}{\mu_1 + \mu_0}$$

μ_1: $E[ON]$

$\mu_1 + \mu_0$: $E[OFF]$

M: # ON/OFF sources

$$a = \sqrt{L_1(T) M}\, \sigma$$

$L_1(T)$: "constant factors"

$$H = \frac{3 - \min\{\alpha_0, \alpha_1\}}{2} = \frac{3 - \alpha_1}{2}$$

if $\alpha_1 < \alpha_0$

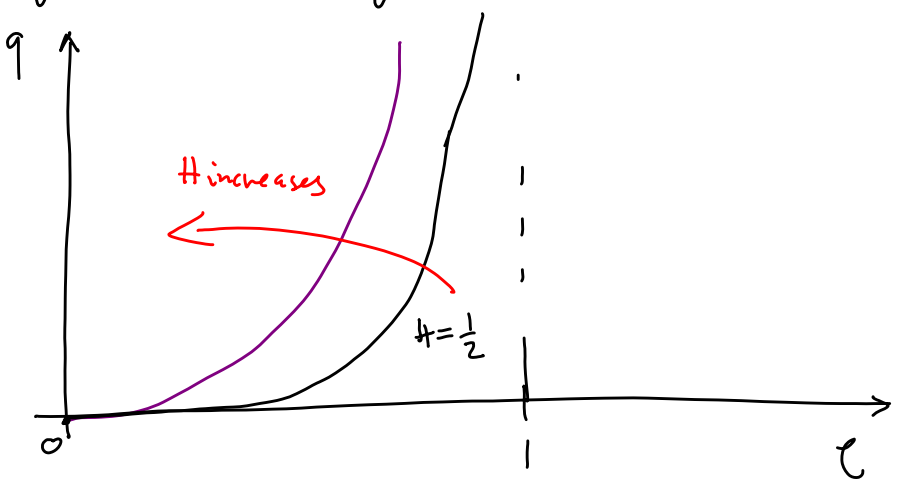
Eg $\alpha_1 = 1.5$ $H = 0.75$

$\alpha_1 = 1.1$ $H = 0.95$

$$\sigma^2 \simeq \frac{\mu_0^2}{(\mu_1 + \mu_0)^3} \frac{2}{(\alpha_1 - 1)(2 - \alpha_1)(3 - \alpha_1)}$$

Heavy tailed ON times tx sizes ave.

Queuing, bw provisioning



q_ε = queue length w/ property that $\Pr[\text{queue} > q_\varepsilon] < \varepsilon$ $\quad \forall \varepsilon > 0$

Eg $\varepsilon = 0.01$ $\quad q_{0.01} =$

$$q_\varepsilon \propto \frac{\rho^{\frac{1}{2(1-\mu)}}}{(1-\rho)^{-\frac{\mu}{1-\mu}}}$$

↑ all the params fixed (but ρ)