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Impianti Informatici

POLITECNICO DI MILANO

Affidabilità: Esercizi

Efficacia del burn-in

$$R(t) = e^{-\int_0^t \lambda(x)\,dx}$$

senza burn-in

$$R(t+h \mid h) = \frac{R(t+h)}{R(h)} = \frac{e^{-\int_0^{t+h} \lambda(x)\,dx}}{e^{-\int_0^{h} \lambda(x)\,dx}}$$

con burn-in

Efficacia del burn-in

$$\boxed{e^{-\int_0^t \lambda(x)\,\mathrm{d}x} < \frac{e^{-\int_0^{t+h} \lambda(x)\,\mathrm{d}x}}{e^{-\int_0^{h} \lambda(x)\,\mathrm{d}x}}}$$

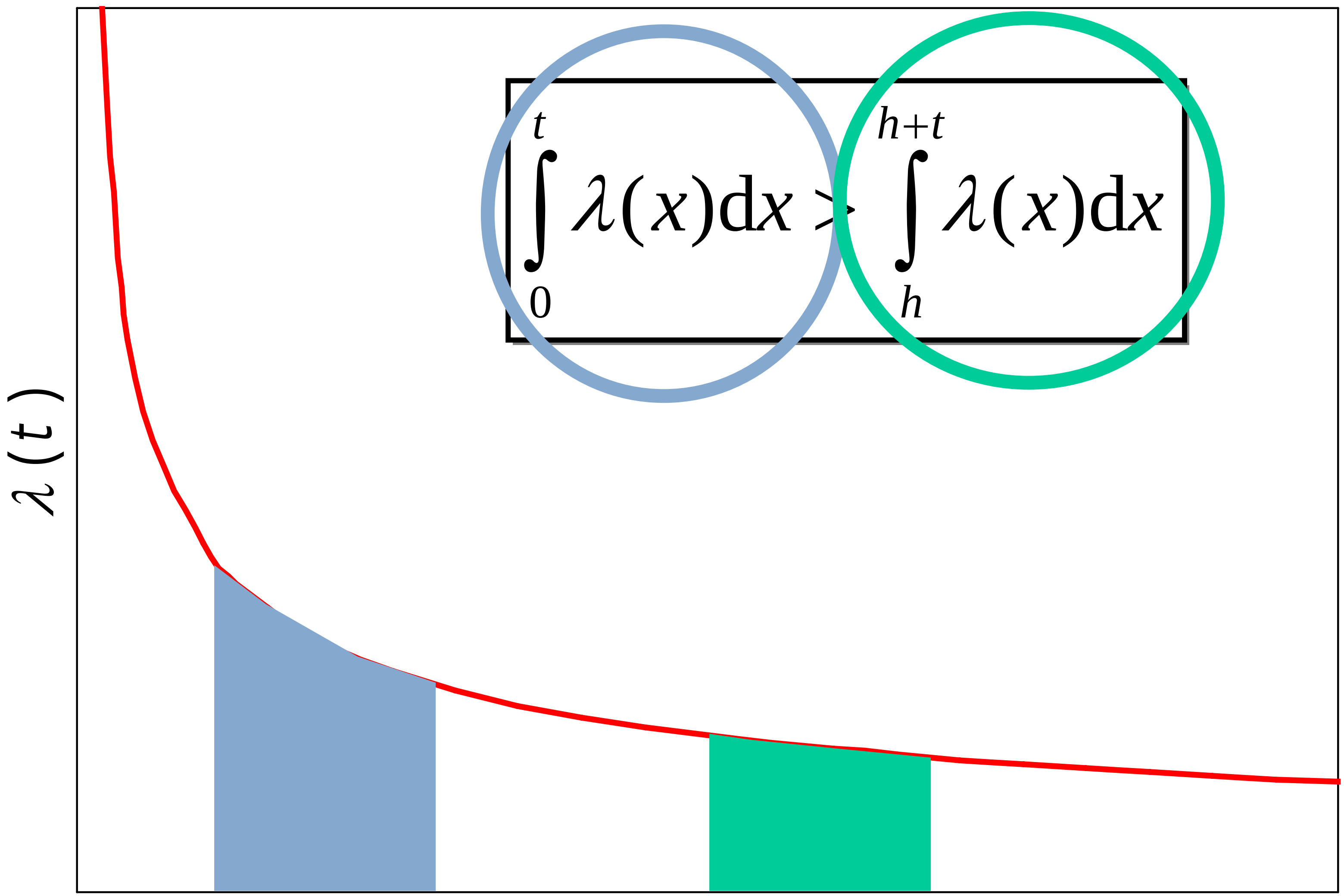
$$\boxed{\int_0^t \lambda(x)\mathrm{d}x + \int_0^h \lambda(x)\mathrm{d}x > \int_0^{h+t} \lambda(x)\mathrm{d}x}$$

Efficacia del burn-in

$$\boxed{\int_0^t \lambda(x)\mathrm{d}x + \int_0^h \lambda(x)\mathrm{d}x > \int_0^h \lambda(x)\mathrm{d}x + \int_h^{h+t} \lambda(x)\mathrm{d}x}$$

$$\boxed{\int_0^t \lambda(x)\mathrm{d}x > \int_h^{h+t} \lambda(x)\mathrm{d}x}$$

Efficacia del burn-in



$$\int_0^t \lambda(x)\mathrm{d}x > \int_h^{h+t} \lambda(x)\mathrm{d}x$$

Sistemi in serie: analisi sensitività

Dato un sistema in serie, di quale componente conviene migliorare l'affidabilità?

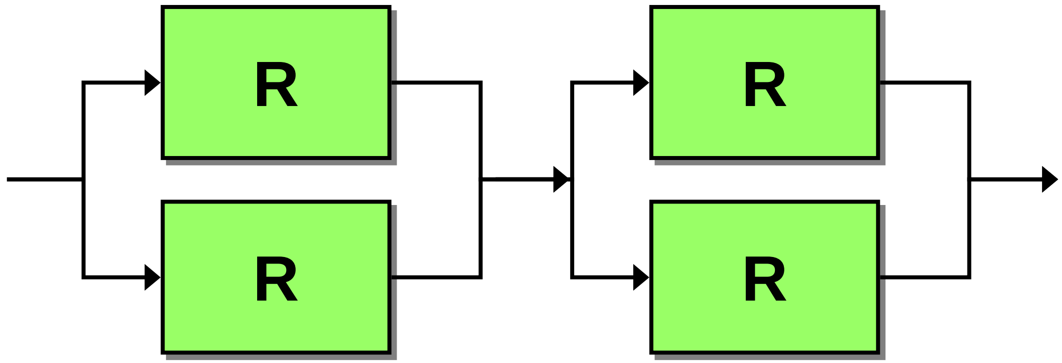
$$\boxed{R_S(t) = \prod_{i=1}^{n} R_i(t)}$$

$$\boxed{\frac{\partial R_S}{\partial R_i} = \frac{R_S}{R_i}}$$

Quello con l'affidabilità (o disponibilità) minore

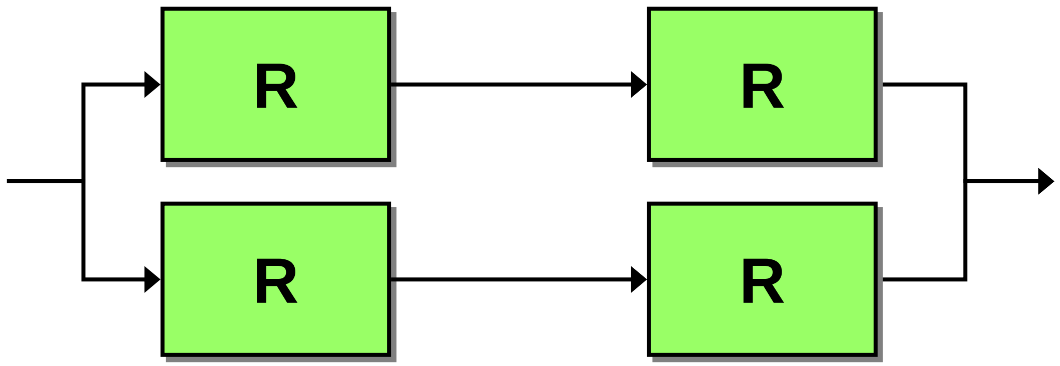
Quale sistema ha affidabilità maggiore?

(a)



$$\left[1-\left(1-R\right)^2\right]^2$$

(b)



$$1-\left(1-R^2\right)\left(1-R^2\right)$$