Sistemas de transmisión digitales y síncronos

Parte I

Objetivos/requisitos: R (bps) y Pe

Recursos: Potencia, ancho de banda, eficiencia espectral

Canales:

$r(t)=C\,s(t)+n(t)$

$r(t)=C(t) * s(t)+n(t)$

$r(t)=C(t,\tau) * s(t)+n(t)$

Balance de enlace
y cobertura

ISI

Desvanecimiento y
Selectividad tiempo/frecuencia

Transición

Modelos:

Señal

Rayos

Digital (Markov)

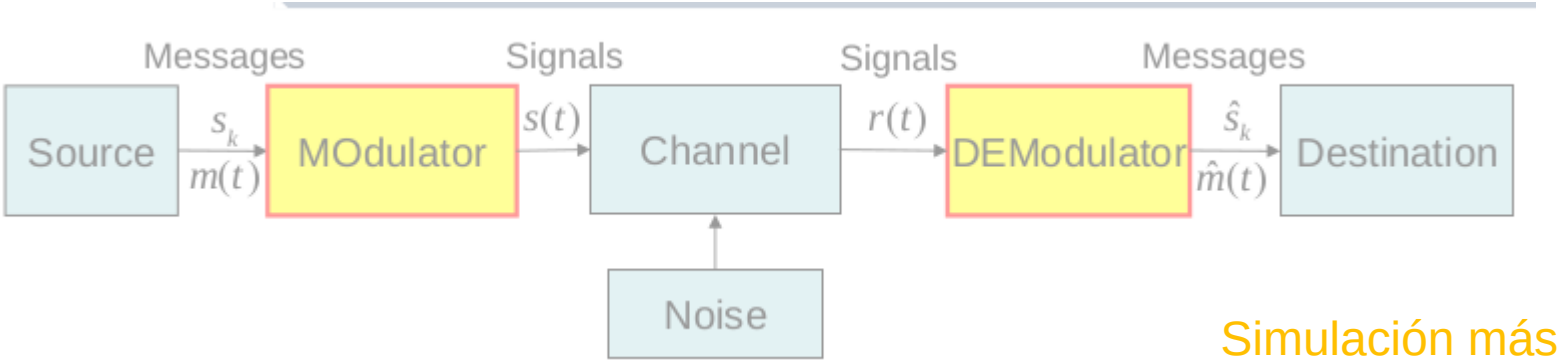
Parte II

Sesión 1: Modelos, **R, Pe, SNR y B**.

Modelo digital síncrono de un sistema de transmisión digital (R, Pe)

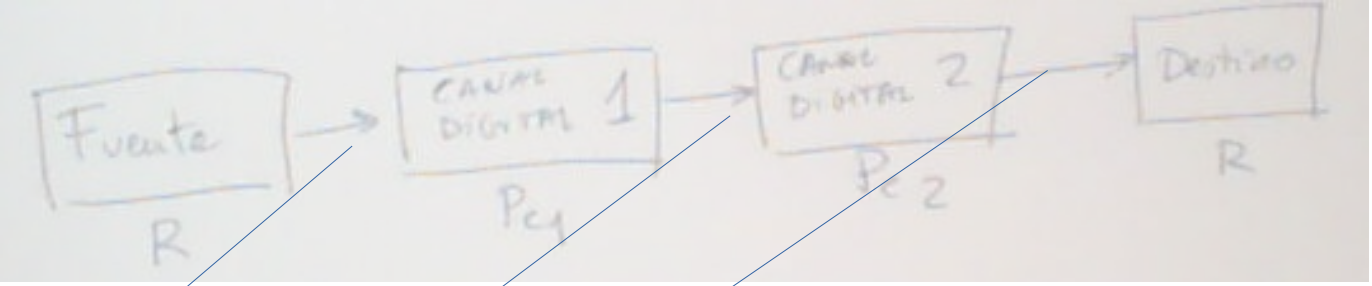
Simulación ligera

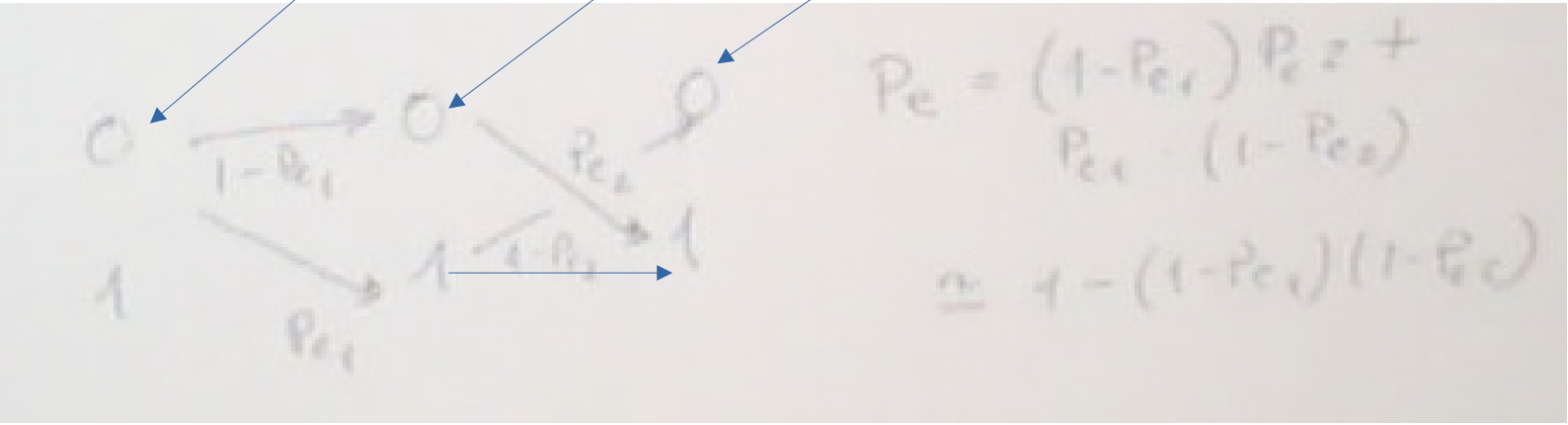
Modelo de señal síncrono de un sistema de transmisión digital (R, Pe, SNR y B)



Simulación más pesada

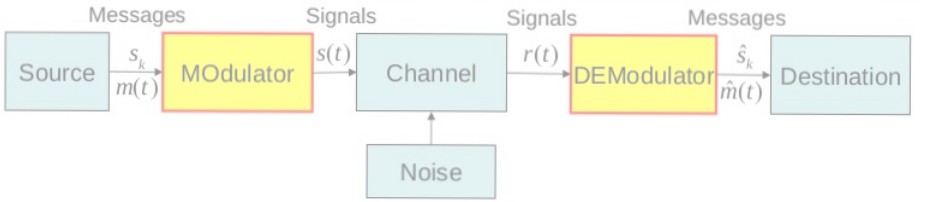
Concatenación de canales digitales síncronos

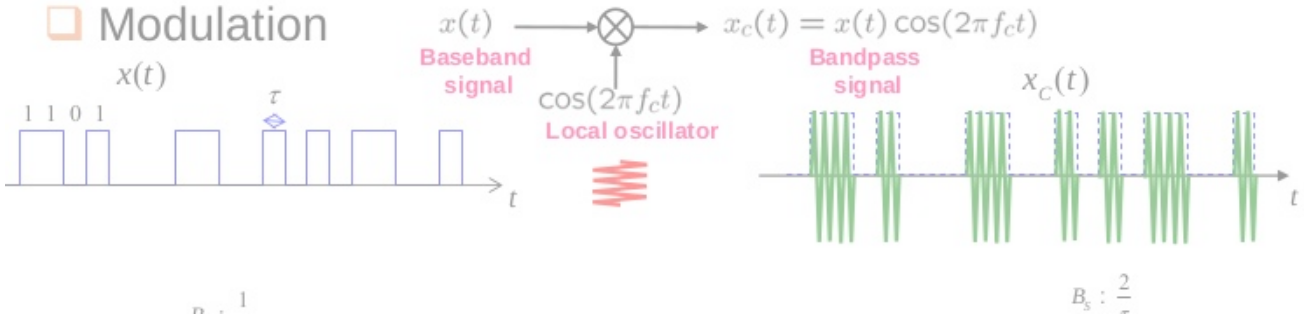


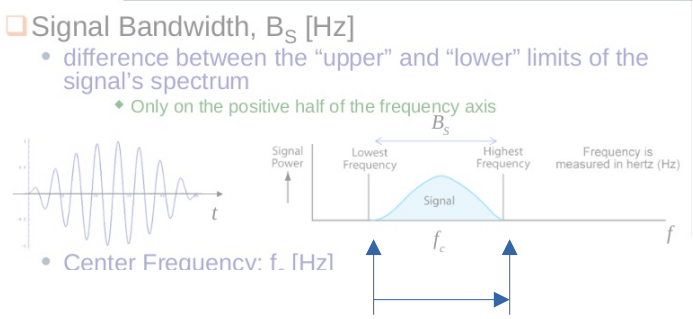


Modelo de señal: ancho de banda

$$r(t) = C\,s(t) + n(t)$$





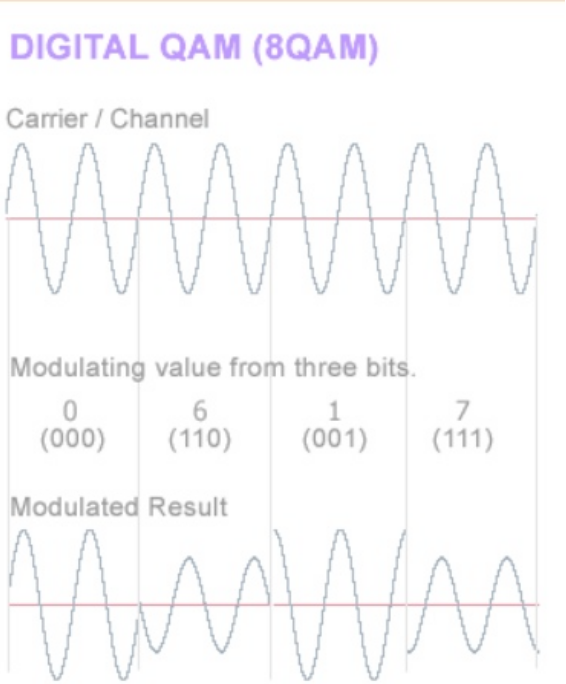


Banda estrecha

Eficiencia espectral, η

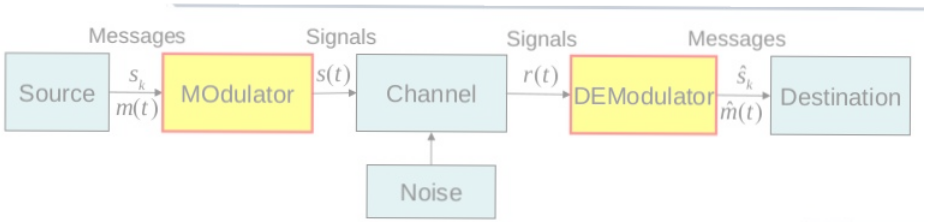
$$\eta = \log_2 M$$

$$R = B\eta$$



Modelo de señal: SNR

$$r(t) = C\,s(t) + n(t)$$



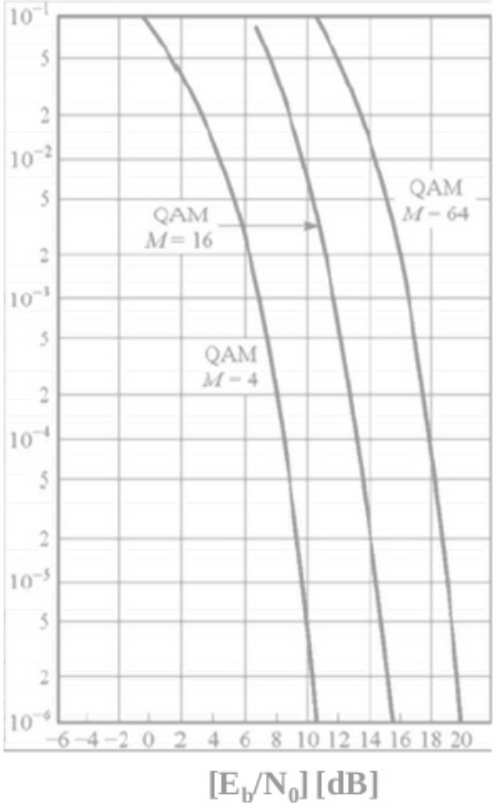
Potencia

$$P_x = \lim_{T\to\infty} \frac{1}{T} \int_{-T/2}^{T/2} x^2(t)\,dt$$

SNR= Pot (C s) / Pot (n)

$$\frac{E_b}{N_0} = \frac{S\,T_b}{N/W} = \frac{S/R_b}{N/W}$$

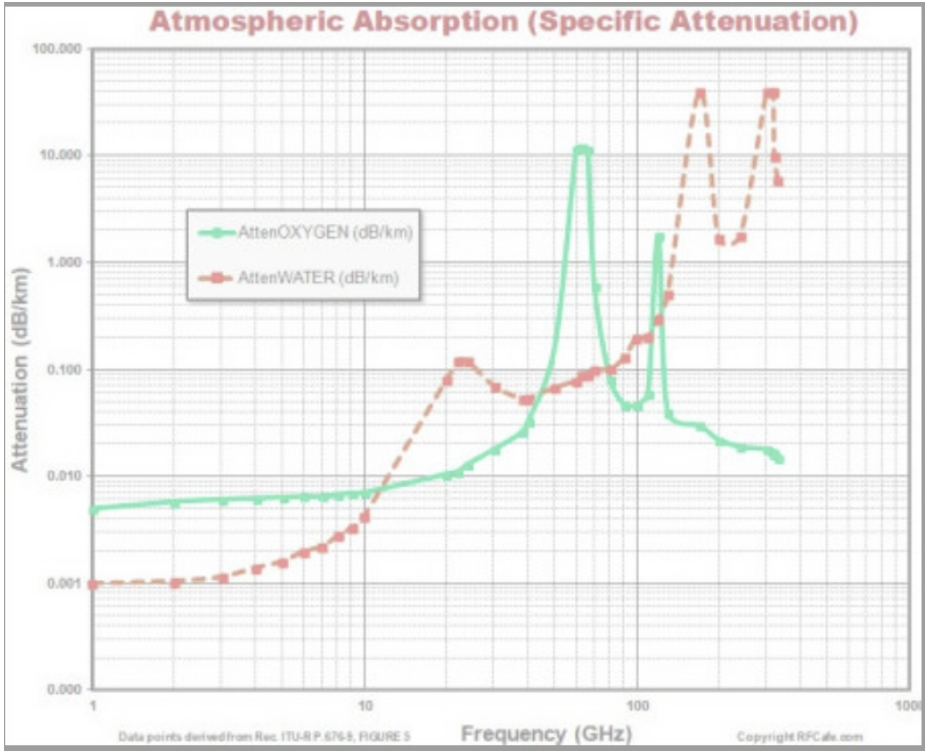
Pe = f (SNR)



Canal: atenuación y ruido

$$r(t) = C\,s(t) + n(t)$$

Atenuación Pot (r_señal)= Pot (s) *C^2



Ruido Pot (n)= N0 * B

Attenuation= 20*log10 (1/C)