

Infocommunication

Digital baseband modulation

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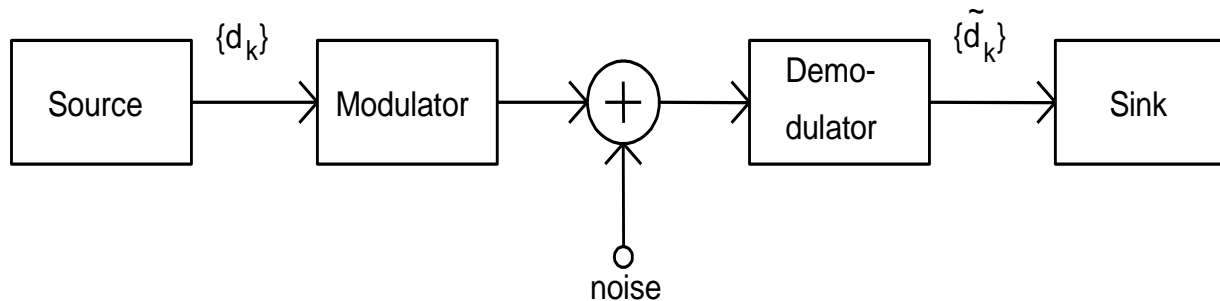
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Overview

- PPT is for demonstration, not for learning!
- Goal of digital baseband modulation
- Basic types of digital baseband modulation
- Pulse Amplitude Modulation (PAM)
- Inter-Symbol Interference (ISI)
- Additive noise

Digital baseband signal

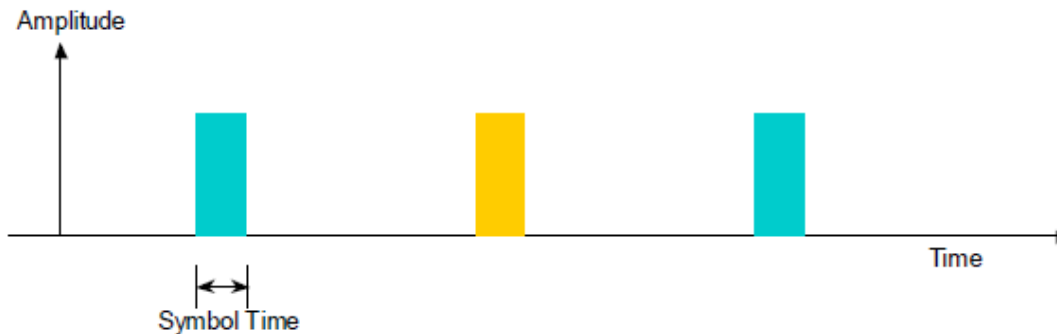
- Transmission



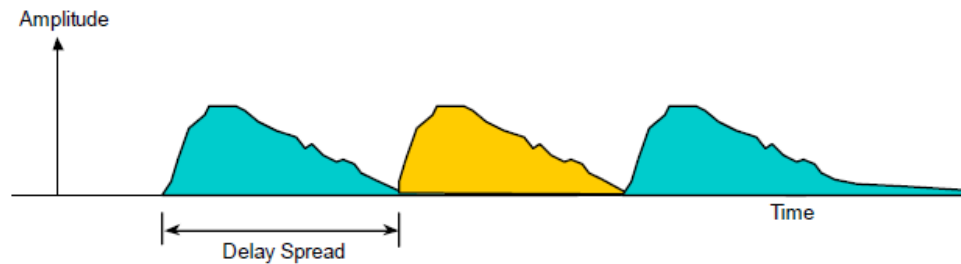
- Channel: analog, LP characteristics
- Source: bits or symbols
- Goal:
 - High bps / baud
 - Low bit error / symbol error

Signal distortion

- What is sent

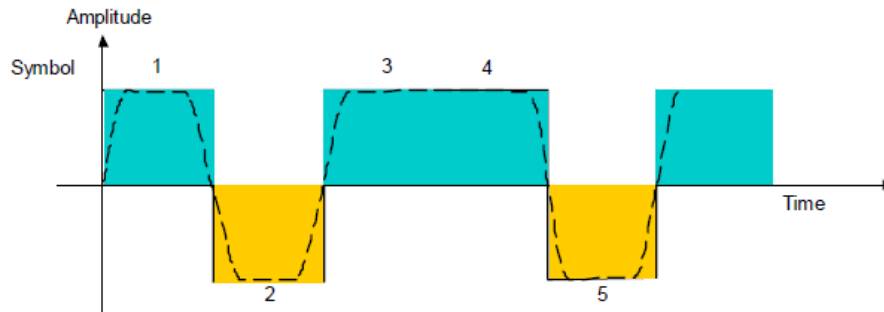


- What is received

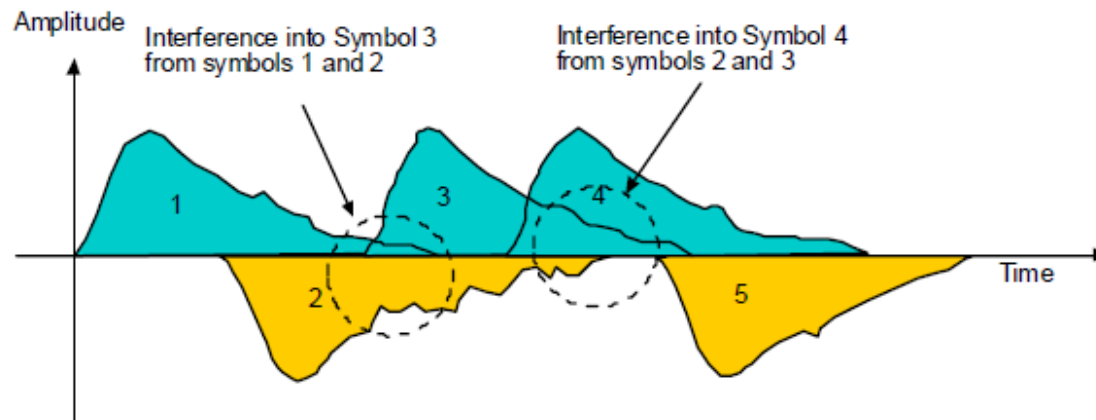


PAM signal distortion 1/4

- What is sent

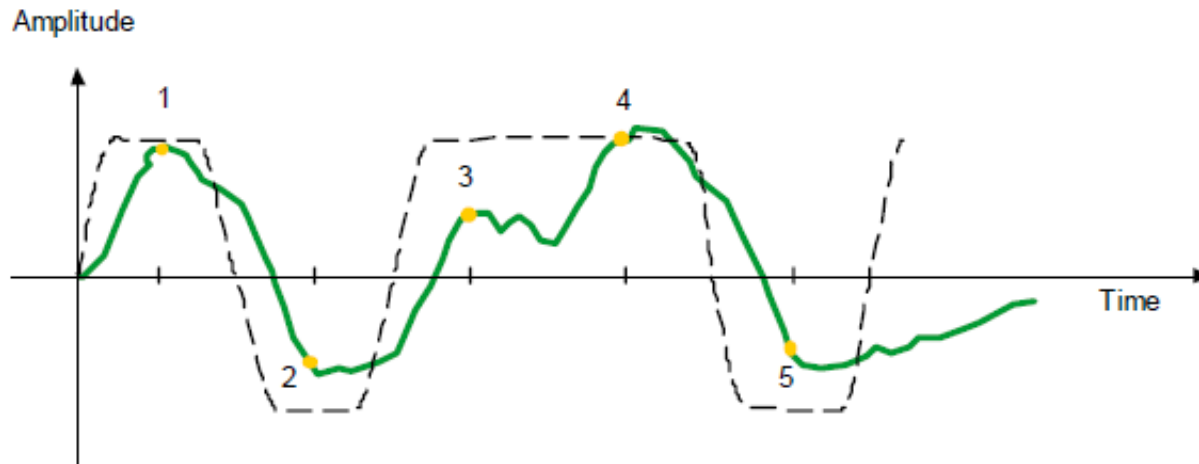


- What is received



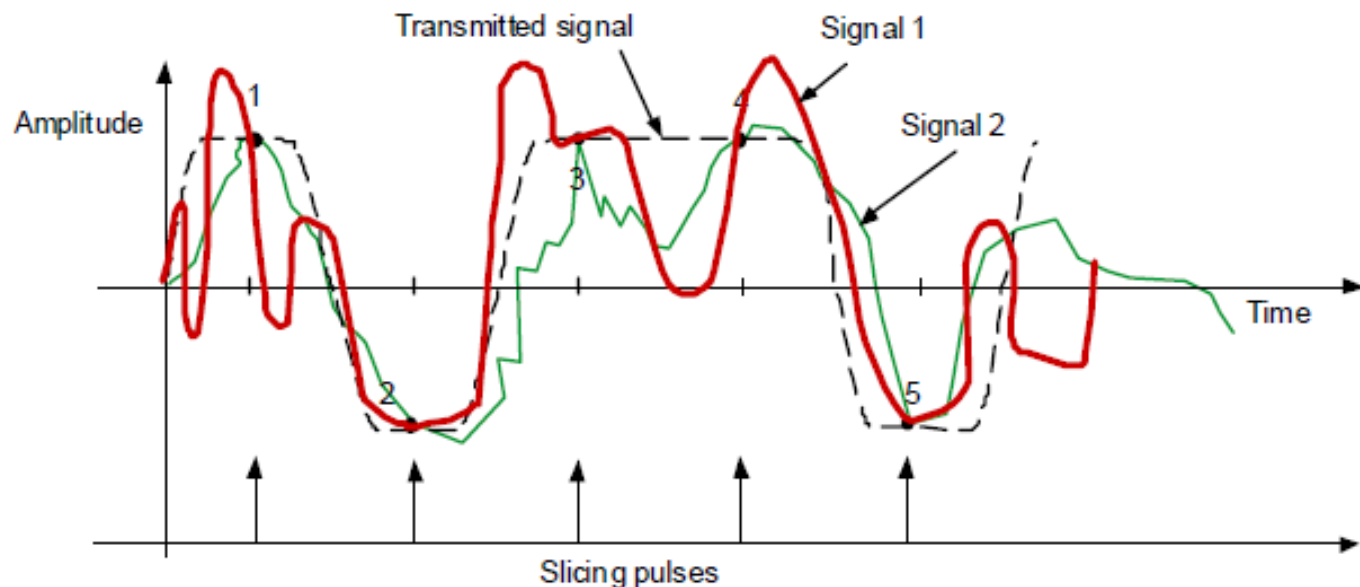
PAM signal distortion 2/4

- Sent and received signals



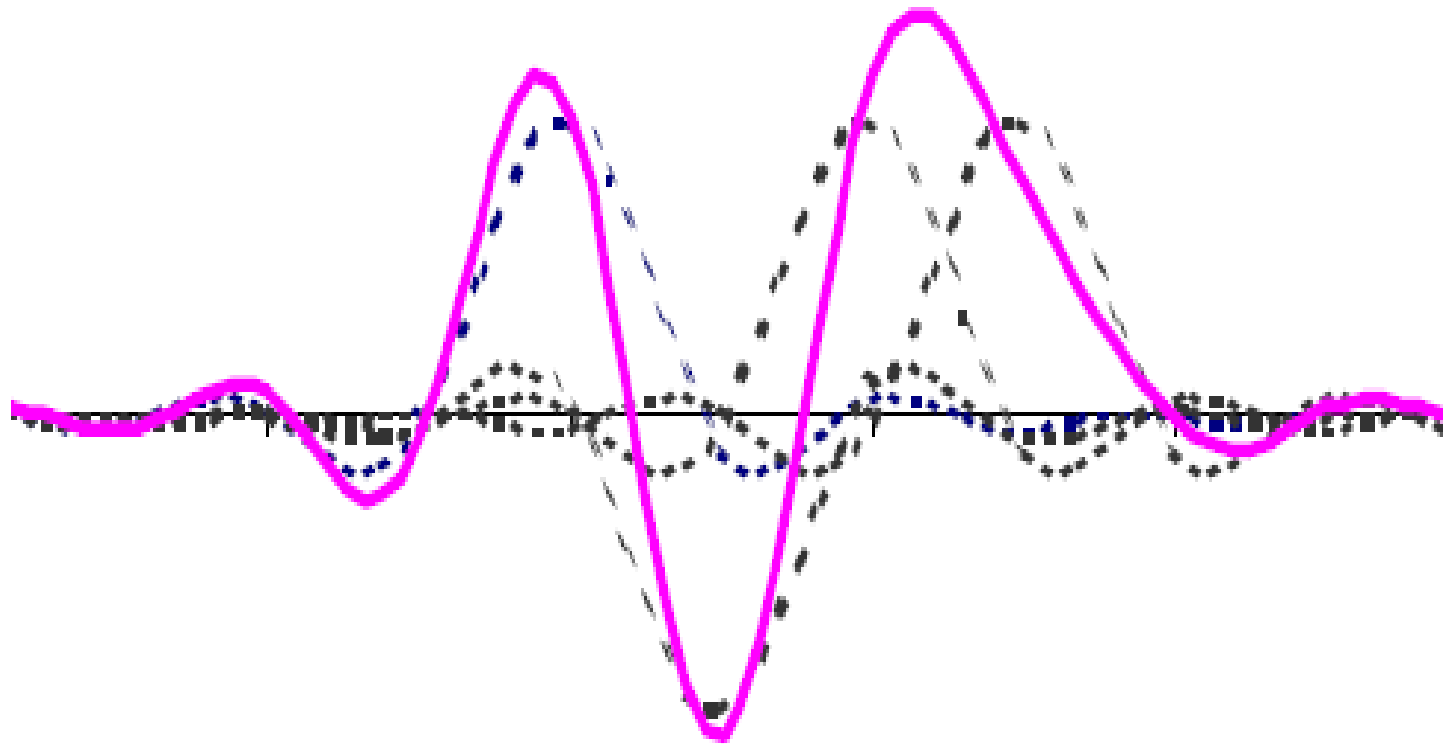
PAM signal distortion 3/4

- We care about what the values are at the sampling points! The rest doesn't matter.

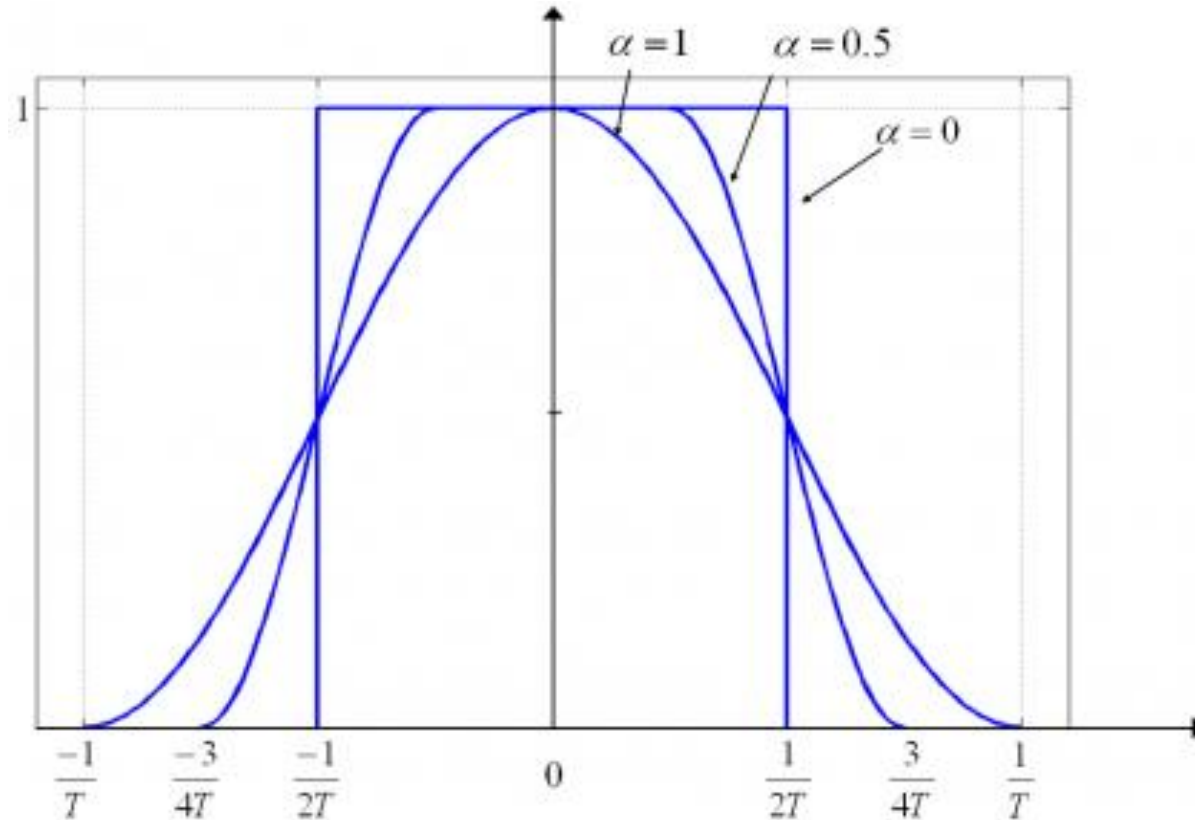


PAM signal distortion 4/4

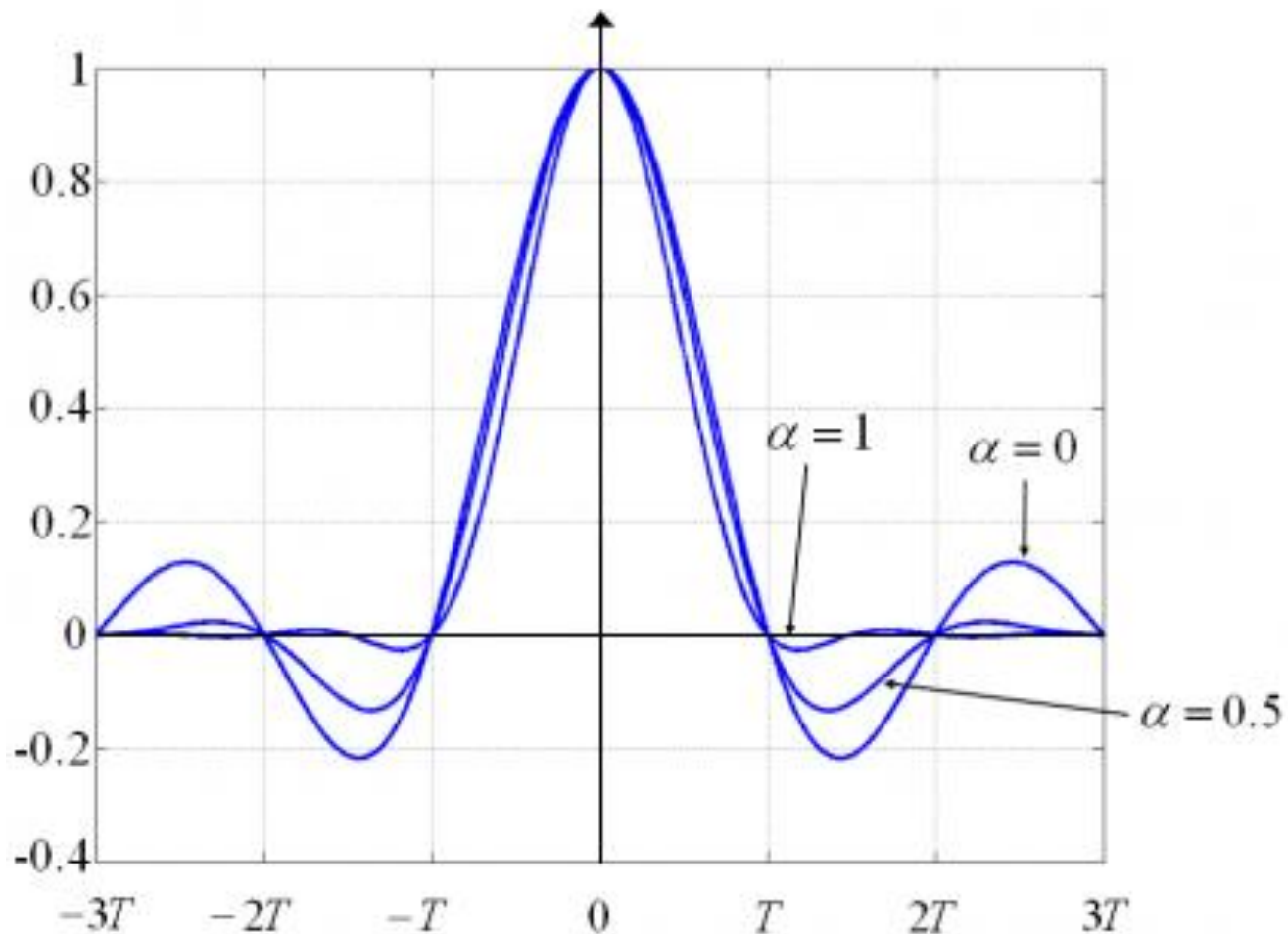
- Sending 1011.



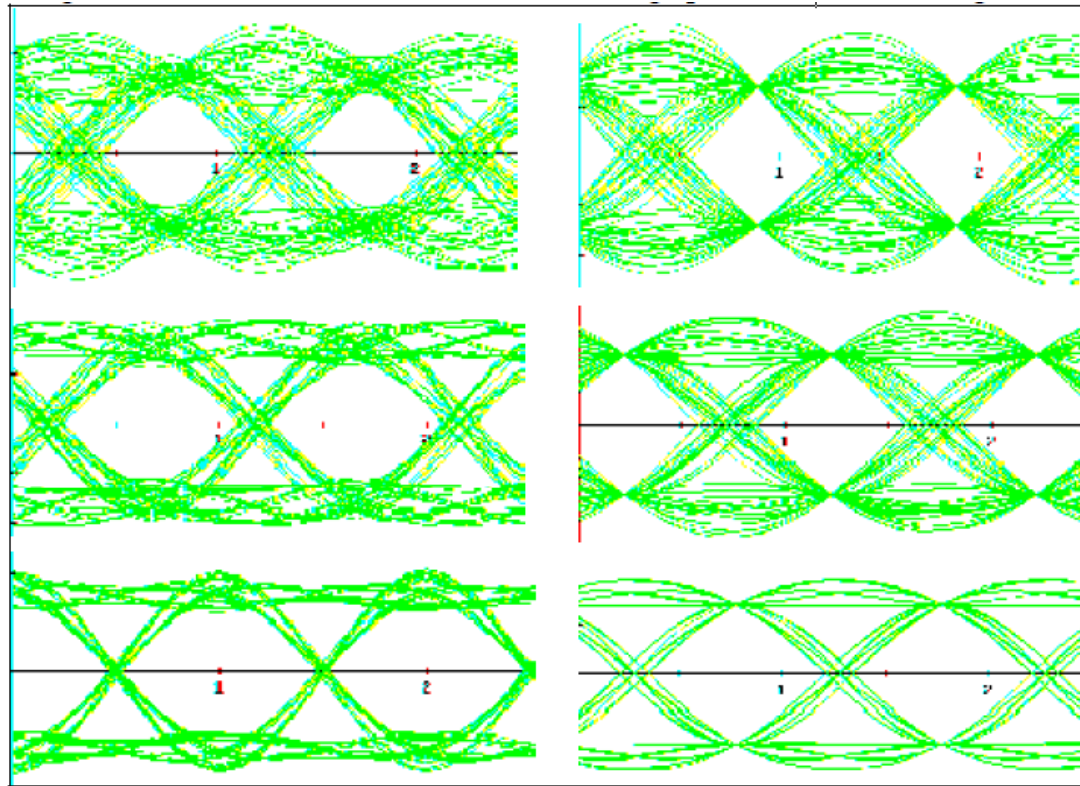
Raised cosine function in frequency domain



Raised cosine function in time domain



Eye pattern



Raised cosine pulses out of transmitter, $\alpha=0.2, 0.4, 0.6$

Raised cosine pulses out of receiver, $\alpha=0.2, 0.4, 0.6$