DA-IICT

CT303

LAB 9

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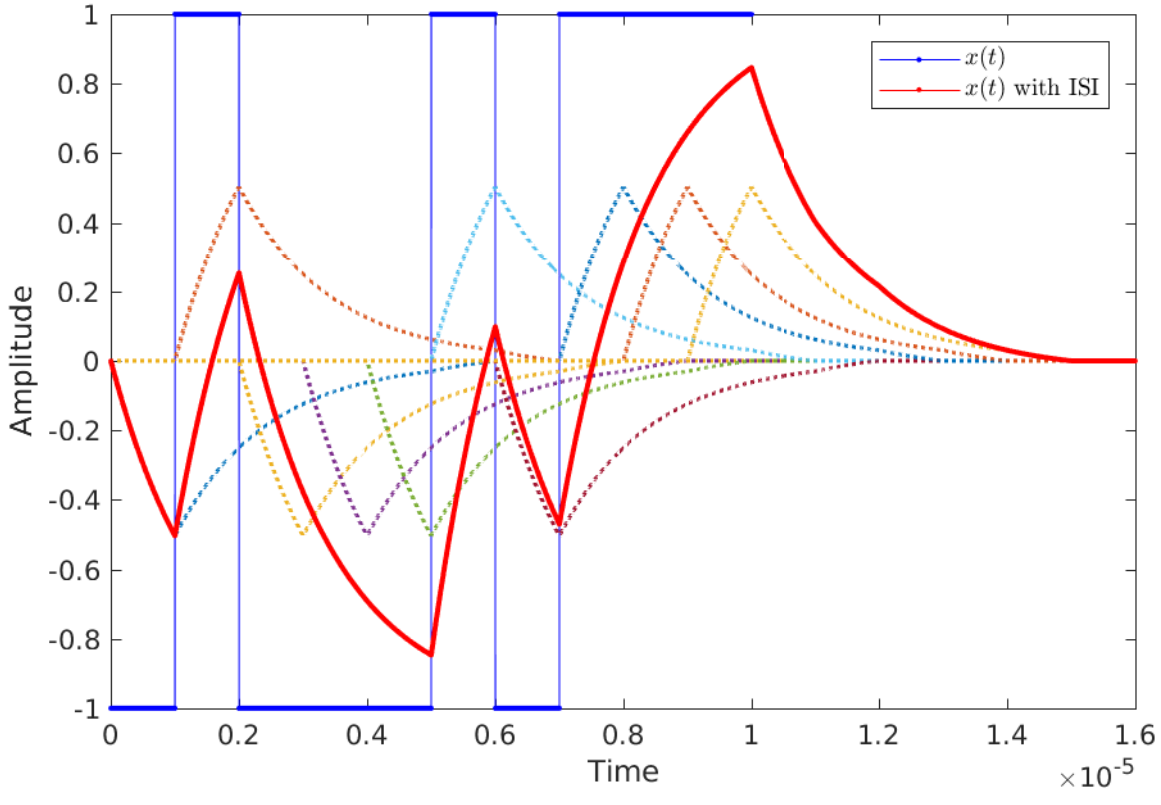
Performance of binary (Pulse Amplitude modulation) PAM signal in the presence of Inter Symbol Interference (ISI) and Noise

1. Generate random polar pulse train $x(t)$ (bitrate $T_b = 10^{-6}$ sample rate $T_s = 10^{-9}$). Simulate the Inter symbol interference (ISI) in $x(t)$ by convolving it with $h(t) = \frac{1}{RC}e^{-t/RC}, R = 1.8, C = 10^{-6}$, where $h(t)$ accounts for bandlimitedness of channel.

   Expected output with 10 pulses is shown below (Note that this differs from person to person since the generated bit stream is random):



2. Now generate pulse train $x(t)$ of 10,000 bits.

   Check Bit error rate (BER) for:

   1. $x(t) + n(t)$ sampled at T_b (No ISI - Only noise).
   2. $x(t)$ with ISI sampled at T_b.
   3. $x(t)$ with ISI + $n(t)$ sampled at T_b (Both ISI and noise).
   4. repeat above cases when there is a timing error.

   Note: $n(t)$ is AWGN. Consider different variances for noise. (Take variance 0.2 to 2).

   What you concluded from above experiments?