Temporal Characteristics of Random Processes

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August 2, 2019

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Based on
Probability, Random Variables and Random Signal Principles,
P.Z. Peebles,Jr. and B. Shi

Outline

Random variables with time

N Gaussian random variables

Definition

a function of both outcome s and time t
assign a time function to every outcome s

$$x(t, s)$$

the family of such time functions is called a random process

$$X(t, s)$$

the short-form notation $x(t)$ to present a specific waveform of a random process

$$X(t)$$

Random variables with time
N Gaussian random variables

Definition

$$X_i = X(t_i, s) = X(t_i)$$