

Multiple Random Variables

Young W Lim

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

Outline

1 Joint Distribution and its Properties

Probability Distribution Function

Definition

events :

$$A = \{X \leq x\}$$

$$B = \{Y \leq y\}$$

probability distribution functions :

$$F_X(x) = P\{X(s) \leq x\}$$

$$F_Y(y) = P\{Y(s) \leq y\}$$

Joint Distribution Function

joint event $\{X \leq x, Y \leq y\} = (A \cap B)$

joint probability distribution function

an $F_X(x, y) = P\{X \leq x, Y \leq y\} = P(A \cap B)$