X, Y сл.вел $\quad g: \mathbb{R}\times\mathbb{R} \longrightarrow \mathbb{R}$

$Z = g(X,Y)$ е дискр.сл.вел

X	x_1	x_2	---
$\mathbb{P}$	p_1	p_2	---

$\sum p_j = 1$

$$Z = \sum_j \sum_k g(x_j, y_k)\, \underset{\displaystyle 1_{H_j \cap \tilde{H}_k}}{\underset{\shortparallel}{1\{X = x_j;\ Y = y_k\}}} \ominus$$

Y	y_1	y_2	---
$\mathbb{P}$	q_1	q_2	---

$\sum q_j = 1$

$$\ominus \sum_j \sum_k g(x_j, y_k)\, 1_{H_j} 1_{\tilde{H}_k} = \sum_j \sum_k g(x_j, y_k)$$

$1_{j,k} =$

Независимост на дискр.сл.вел

Дефиниция Нека X, Y са две дискр.сл.вел във вер.простр. V. Тогава $X \perp\!\!\!\perp Y$

$$\iff \mathbb{P}(X = x_j;\ Y = y_k) = \mathbb{P}(\underbrace{X = x_j}_{A_j} \cap \underbrace{Y = y_k}_{B_k}) = \mathbb{P}(\underbrace{X = x_j}_{A_j})\,\mathbb{P}(\underbrace{Y = y_k}_{B_k}) \quad \forall j\ \forall k$$

X и Y са независими

⊕ $\Omega = \{(0,0);(0,1);(1,0);(1,1)\}$ $\quad \mathcal{A} = 2^\Omega$; $\mathbb{P}(\{0,0\}) = \mathbb{P}(\{1,0\}) = \mathbb{P}(\{0,1\}) = \mathbb{P}(\{1,1\}) = \frac{1}{4}$

$X: \Omega \longrightarrow \mathbb{R} \quad X(\omega) = \omega(1) \quad X([0,1]) = 0$

$Y: \Omega \longrightarrow \mathbb{R} \quad Y(\omega) = \omega(2) \quad Y([0,1]) = 1$

Проверете, че $\mathbb{P}(X=0;\ Y=0) \overset{?}{=} \mathbb{P}(X=0)\,\mathbb{P}(Y=0)$

$\mathbb{P}(X=1;\ Y=0) \overset{?}{=} \mathbb{P}(X=1)\,\mathbb{P}(Y=0)$

Функция на разпределение на сл.вел

Дефиниция Нека X е сл.вел във вер.простр. V. Тогава $F_X(x) = \mathbb{P}(X < x)$ $\forall x \in (-\infty; +\infty)$ се нарича функ. на разп. на X.

функ. на разпр.

⊕

X	x_1	x_2	x_3	---
$\mathbb{P}$	p_1	p_2	p_3	---

$x_1 < x_2 < x_3$ ---

$$F_X(x) = \begin{cases} 0 & x \le x_1 \\ p_1 & x \in (x_1, x_2] \\ p_1 + p_2 & x \in (x_2, x_3] \\ \vdots & \\ p_1 + p_k & x \in (x_k, x_{k+1}] \end{cases}$$