19.11.

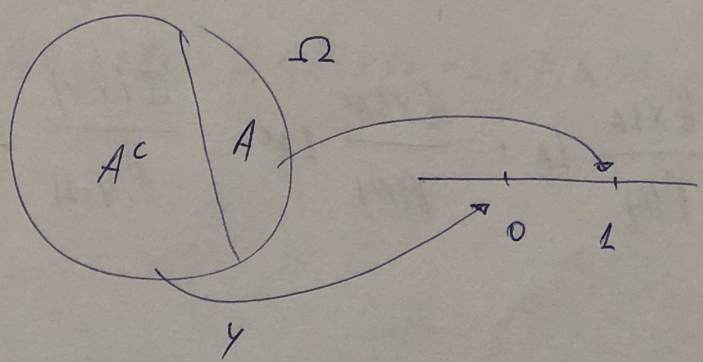
СЕМ лекция

Условно математическо очакване

X $\min\limits_{a\in\mathbb{R}} \mathbb{E}(X-a)^2 = \mathbb{E}(X-\mathbb{E}X)^2 = \mathbb{D}X$ $\quad a = \mathbb{E}X$

информационна прелюдия

$$Y = \begin{cases} 1 & p \\ 0 & 1-p \end{cases}$$

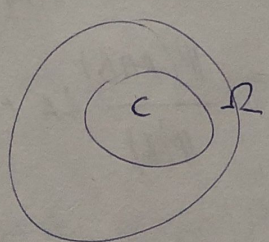


$Y = 1_A = 1_{\{Y=1\}}$

$p = \mathbb{E}Y = \mathbb{E}1_A = \mathbb{E}1_{Y=1} = \mathbb{P}(A) = \mathbb{P}(Y=1)$

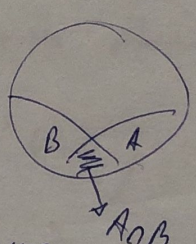
По-общо $C \subseteq \Omega$

$\mathbb{E}1_C = \mathbb{P}(C)$



A и B, тогава $1_A 1_B = 1_{A\cap B}$

$\mathbb{E}1_A 1_B = \mathbb{P}(A\cap B)$

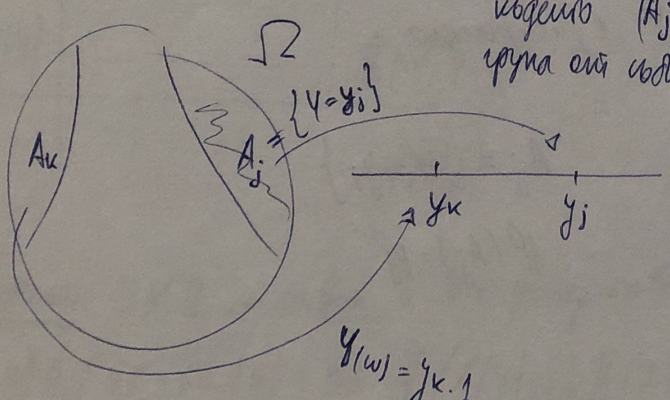


Y е дискр. сл. вел., тогава $Y = \sum\limits_j y_j 1_{A_j}$,

където (A_j) е пълна група от събития и

$\mathbb{P}(A_j) = \mathbb{P}(Y=y_j)$

$A_j = \{Y=y_j\}$



X и наблюдаване $Y = \begin{cases} 1 & p \\ 0 & 1-p \end{cases}$ $\quad Y = 1_A \quad A = \{Y=1\}$

$G: \{0,1\} \to \mathbb{R}$

$\min\limits_G \mathbb{E}(X-G(Y))^2 = ? = \mathbb{E}(X-f(Y))^2$

$G(Y) = a1_A + b1_{A^c} = a\cdot Y + b(1-Y)$