

Definition 11.6 Let κ be a real function. An average input constraint (κ, P) for a CMC is the requirement that for any codeword (x_1, x_2, \dots, x_n) transmitted over the channel,

$$\frac{1}{n} \sum_{i=1}^n \kappa(x_i) \leq P.$$

Remarks

Definition 11.7 The capacity of a continuous memoryless channel $f(y|x)$ with input constraint (κ, P) is defined as

$$C(P) = \sup_{F(x): E\kappa(X) \leq P} I(X; Y).$$