

- After discarding the worse half of \mathcal{C}^* , the rate of the code becomes

$$\begin{aligned}\frac{1}{n} \log \frac{M}{2} &= \frac{1}{n} \log M - \frac{1}{n} \\ &> \left(I(X; Y) - \frac{\epsilon}{2} \right) - \frac{1}{n} \\ &> I(X; Y) - \epsilon\end{aligned}$$

for sufficiently large n .

- Here we assume that the decoding function is unchanged, so that deletion of worst half of the codewords does not affect the conditional probabilities of error of the remaining codewords.