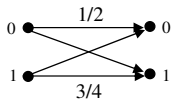


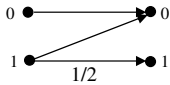
Boris Kudryashov

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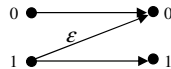
November 8, 2016



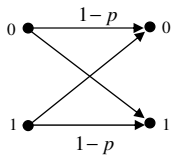
a)



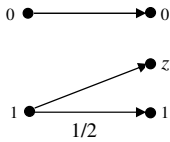
б)



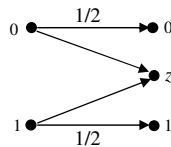
в)



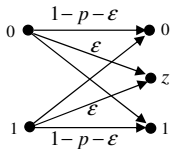
г)



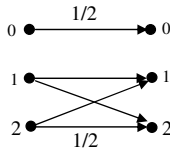
д)



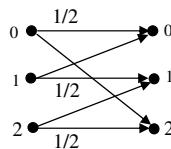
е)



ж)



з)



и)

- 1 For the channel at pic.2a, with a uniform input alphabet  $X$ , calculate the mutual information  $I(x; y), x \in X, y \in Y$  and the average mutual information  $I(X; Y)$ . Explain the results.

- 2 For the channel at pic.26, draw a plot of dependence between  $I(X; Y)$  and  $p(x = 1) = p$  without doing calculations and without using properties of mutual information.

- 3 For the channel at pic.2B, draw a plot mutual information as a functions of  $\varepsilon$ , assuming uniform alphabet, without doing calculations and without using properties of mutual information.

- 4 For channels at  $\text{pic.2Г-2и}$ , calculate the channel throughput.