

Lemma 7.17 Let $(\mathbf{X}', \mathbf{Y}')$ be n i.i.d. copies of a pair of generic random variables (X', Y') , where $X' \sim X$, $Y' \sim Y$, and X' and Y' are independent. Then

$$\Pr\{(\mathbf{X}', \mathbf{Y}') \in T_{[XY]_{\delta}}^n\} \leq 2^{-n(I(X;Y) - \tau)},$$

where $\tau \rightarrow 0$ as $\delta \rightarrow 0$.