We wish to show the following:

Lemma 0.1 *Let* $f : \{-1, 1\}^m \to [-1, 1]$. *Then*

$$\# \left| \left\{ i : \mathrm{Inf}_i^{\leq C}(f) \geq \tau \right\} \right| \leq C/\tau.$$

We instead show the following, which is clearly stronger:

Lemma 0.2 *Let* $f : \{-1, 1\}^m \to [-1, 1]$. *Then*

$$\sum_{i=1}^{m} \mathrm{Inf}_i^{\leq C}(f) \leq C.$$

Proof:

$$\sum_{i=1}^{m} \mathrm{Inf}_i^{\leq C}(f) = \sum_{i=1}^{m} \sum_{\substack{|S| \leq C \\ S \ni i}} \hat{f}(S)^2 = \sum_{|S| \leq C} \sum_{i \in S} \hat{f}(S)^2 = \sum_{|S| \leq C} |S| \hat{f}(S)^2 \leq C \sum_{S} \hat{f}(S)^2 \leq C.$$

□