



HighLevelidea

- All serve sample the same exponential random variables  $e_1, \dots, e_n$

• Canonicalized using pseudorandom generators

• We want to find  $i^* = \operatorname{argmax}_i e_i^{-1} (\sum_j x_i(j))^p$

- Server  $j$  computes the vector  $(e_1^{-1}x_1(j)^p, \dots, e_n^{-1}x_n(j)^p)$



- Then server  $j$  samples  $M = \mathcal{O}(s^{p-2} \cdot \log^3 n)$  coordinates independently



- Send all the sampled coordinates to the central server -- Does it receive  $i^*$ ?



$$i \propto e_i^{-1} x_i(j)^p$$

# High Level Ideas

- All servers sample the **same** exponential random variables  $\mathbf{e}_1, \dots, \mathbf{e}_n$ 
  - Can be derandomized using pseudorandom generators
- We want to find  $i^* = \operatorname{argmax}_i \mathbf{e}_i^{-1} (\sum_j x_i(j))^p$
- Server  $j$  computes the vector  $(\mathbf{e}_1^{-1} x_1(j)^p, \dots, \mathbf{e}_n^{-1} x_n(j)^p)$ 
$$i \propto \mathbf{e}_i^{-1} x_i(j)^p$$
- Then server  $j$  samples  $M = O(s^{p-2} \cdot \log^3 n)$  coordinates independently
- Send all the sampled coordinates to the central server -- Does it receive  $i^*$ ?

# Receiving the Top Coordinate