Analysis

- Theorem: can choose η so that, for any game $\mathbf{M}$ with m rows, and any opponent,

$$\underbrace{\frac{1}{T}\sum_{t=1}^{T}\mathbf{M}(\mathbf{P}_t,\mathbf{Q}_t)}_{\text{actual average loss}} \quad \leq \quad \underbrace{\min_{\mathbf{P}}\frac{1}{T}\sum_{t=1}^{T}\mathbf{M}(\mathbf{P},\mathbf{Q}_t)}_{\text{best average loss } (\leq v)} \quad + \Delta_T$$

where $\Delta_T = O\left(\sqrt{\frac{\ln m}{T}}\right) \to 0$

- regret Δ_T is:
  - logarithmic in # rows m
  - independent of # columns
- therefore, can use when working with very large games