Solving a Game

[with Freund]

- suppose game $\mathbf{M}$ played repeatedly
  - Mindy plays using MW
  - on round t, Max chooses best response:

$$\mathbf{Q}_t = \arg\max_{\mathbf{Q}} \mathbf{M}(\mathbf{P}_t, \mathbf{Q})$$

- let

$$\overline{\mathbf{P}} = \frac{1}{T}\sum_{t=1}^{T} \mathbf{P}_t, \quad \overline{\mathbf{Q}} = \frac{1}{T}\sum_{t=1}^{T} \mathbf{Q}_t$$

- can prove that $\overline{\mathbf{P}}$ and $\overline{\mathbf{Q}}$ are Δ_T-approximate minmax and maxmin strategies:

$$\max_{\mathbf{Q}} \mathbf{M}(\overline{\mathbf{P}}, \mathbf{Q}) \leq v + \Delta_T$$

and

$$\min_{\mathbf{P}} \mathbf{M}(\mathbf{P}, \overline{\mathbf{Q}}) \geq v - \Delta_T$$