

What can a deterministic algorithm do?

- Starts with deterministic matrices $S_1^{(1)}, \dots, S_t^{(1)}$ and obtains

$$\langle \text{vec}(S_i^{(1)}), (\alpha/\sqrt{n}) \cdot u \otimes v \rangle + \langle \text{vec}(S_i^{(1)}), \text{vec}(G) \rangle$$

- Based on responses, pick $S_1^{(2)}, \dots, S_t^{(2)}$ and so on
- Assume $\text{vec}(S_i^{(j)})$ are orthonormal w.l.o.g
- Are first round responses enough to pick good measurements in second round?

Deterministic Algorithm

- Stack $S_1^{(1)}, \dots, S_t^{(1)}$ to get a matrix $Q^{(1)}$

$$r^{(1)} = \frac{\alpha}{\sqrt{n}} \begin{matrix} \text{blue box} & Q^{(1)} \end{matrix} \begin{matrix} \text{red box} \\ u \otimes v \end{matrix} + \begin{matrix} \text{blue box} & Q^{(1)} \end{matrix} \begin{matrix} \text{red box} \\ \text{vec}(G) \end{matrix}$$

- Based on $r^{(1)}$ pick $Q^{(2)}[r^{(1)}]$