

Profound

- Suffices to produce a distribution of instances for which there is no deterministic algorithm

- Sample $\mu, v \in \mathbb{R}^n$ and $G \in \mathbb{R}^{n \times n}$ all with independent Gaussian coordinates

$$A = \frac{\alpha}{\sqrt{n}} uv^T + G$$

$$\bullet \quad \|G\|_2 \leq 2\sqrt{n}$$

- If α large, say > 10 , algorithm must approximate u and v to output LRA

Proof Ideas

- Suffices to produce a distribution of instances for which there is no deterministic algorithm
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What can a deterministic algorithm do?