

Phase estimation procedure

Best approximations

Suppose $y/2^m$ is the **best approximation** to θ :

$$\left| \theta - \frac{y}{2^m} \right|_1 \leq 2^{-(m+1)}$$

Then the probability to measure y will be relatively high:

$$p_y \geq \frac{4}{\pi^2} \approx 0.405$$

Worse approximations

Suppose there's a **better approximation** to θ between $y/2^m$ and θ :

$$\left| \theta - \frac{y}{2^m} \right|_1 \geq 2^{-m}$$

Then the probability to measure y will be relatively low:

$$p_y \leq \frac{1}{4}$$

