

Title: What experimental contextuality might teach us about experimental higher-order interference

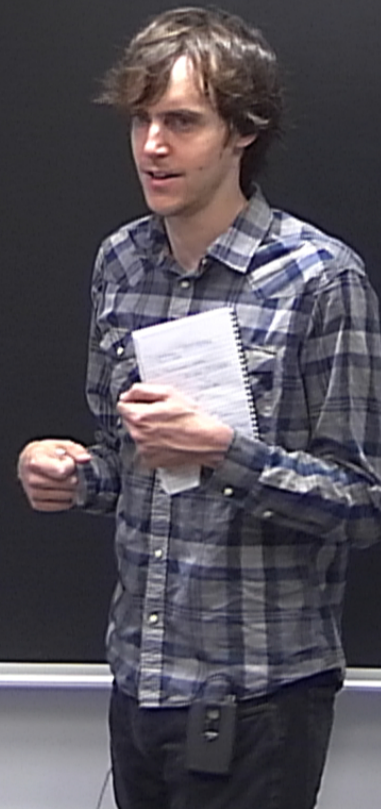
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Abstract:



Contextuality expt arXiv:1506.06244



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Kochen-Specker

Projective $\Rightarrow$ deterministically

$\swarrow$
 ϵ -close to Projective
 $\Rightarrow \epsilon$ -close to deterministic

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$\searrow$
Spekkens def. of contextuality

Def: E_i being GPT
"projective" on $\mathcal{G}$

$$1. \exists s_i \quad (s_i - e_i) \Rightarrow \begin{cases} 1 - \epsilon & i = j \\ \leq \epsilon & i \neq j \end{cases}$$

$$2. \exists p_j, q, s'$$

$$\sum_j p_j (s_j) = q (s) + (1-q) (s')$$

Quantum

$$E_i \geq P_{\text{supp } \rho_i}$$

$$\rho_0 = |0\rangle\langle 0|$$

$$\rho_1 = |1\rangle\langle 1|$$

$$E_0 = |0\rangle\langle 0| + \frac{1}{2} |2\rangle\langle 2|$$

$$E_1 = |1\rangle\langle 1| + \frac{1}{2} |2\rangle\langle 2|$$

$$\sum_j p_j \rho_j = q \rho + (1-q) \rho'$$

$$\Rightarrow \text{supp } \rho \leq \bigvee \text{supp } \rho_j$$

$$\rho = |+\rangle\langle +| \quad |+\rangle \propto |0\rangle + |1\rangle$$