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$$\mathbb{P}(X, \tilde{X}) = \frac{1}{Z} \exp\left(\sum_{i \sim j} X_i X_j \right) \frac{1}{Z} \exp\left(\sum_{i \sim j} \tilde{X}_i \tilde{X}_j \right)$$

independent copy?

not valid (no cross terms)

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