

## **Eigenstate Thermalization in Non-Abelian Lattice Gauge Theories**

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### Abstract:

Understanding how an isolated quantum system thermalizes is an interesting and important physics question. On one hand, an initial pure state undergoing unitary time evolution preserves its purity and thus has zero entropy. On the other hand, a thermal state has a nonzero entropy, which seems to indicate an isolated quantum system will not thermalize. A paradigm of understanding this question is the eigenstate thermalization hypothesis (ETH), which states that matrix elements of local observables in the energy eigenstate basis are equal to the corresponding microcanonical ensemble values, up to corrections that decrease exponentially with the system size. Testing ETH for non-Abelian gauge theories is not only an interesting theoretical question, but may also help us to understand the initial stage of relativistic heavy ion collisions. In this talk, I will show results of testing this hypothesis for the 2+1 dimensional SU(2) non-Abelian gauge theory on a lattice. I will also discuss some future research ideas along this direction.