A $U(1)$ Theory with Higgs Mechanism of the Toric Code Topological order

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Chern-Simons theory can perfectly describe a FQHE topological order. A question is whether it can describe a topological order with a discrete gauge group, the simplest case arguably being the toric code topological order. [1] shows that by Higgs mechanism we can break down the gauge group, and therefore a toric code order – a $\mathbb{Z}_2$ topological order – can be embedded into a $U(1)$ theory. [1] Sec. 5

References

[1] Subir Sachdev. Topological order, emergent gauge fields, and fermi surface reconstruction. *Reports on Progress in Physics*, 82(1):014001, Nov 2018.