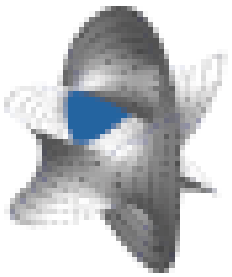

Contribution ID: **15** Type: **not specified**

Machine learning the Kitaev honeycomb model

Wednesday 15 December 2021 16:00 (30 minutes)

In this talk, we present recent results about the capability of restricted Boltzmann machines (RBMs) to find solutions for the Kitaev honeycomb model with periodic boundary conditions. We start with a review of non-abelian topological phases of matter and their importance for a scheme of quantum computation known as "topological quantum computation". We then proceed to introduce the Kitaev Honeycomb model and our method for finding representations of its ground and excited states using RBMs. Furthermore, the possibility of realizing anyons in the RBM is discussed and an algorithm is given to build these anyonic excitations and braid them for possible future applications in quantum computation. Using the correspondence between topological field theories in (2 + 1)d and 2d CFTs, we propose an identification between our RBM states with the Moore-Read state and conformal blocks of the 2d Ising model.

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