QAOA Tutorial Notes

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Contents

1 Notes

The following notes describe the structure of the tutorial for the PennyLane QAOA module:

1. The tutorial should begin by discussing very briefly what QAOA is, but without diving into very much depth (for users who want a more detailed explanation, we can refer them to the other QAOA tutorial)
2. The problem we solve in this QAOA tutorial should probably be something other than MaxCut (as that was already done in the other QAOA tutorial). Maybe TSP?
3. Assuming we do choose to do TSP, the next section could talk about how, to do QAOA, we need cost and mixer Hamiltonians to define cost and mixer layers. We show that building the cost Hamiltonian for TSP is complicated, then show how it can be done with one line with PL QAOA. We can also show how the mixer can be easily created.
4. Explain how we can pass these cost and mixer Hamiltonians into qaoa.cost and qaoa.mixer to create the QAOA layers, and then pass them into qaoa.alternate to create the ansatz.
5. Show how we can easily add these features into a standard PL workflow.