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Machine learning with many-body tensor networks

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Special exercise

PHYS-E0421 – Solid-State Physics

1 Introduction

TODO review paragraph. https://youtu.be/q8UTwdjS95k

Central to these developments are tensor-network representations of many-body quantum states. These are successful variational families of many-body wave functions, naturally emerging from low-entanglement representations of quantum states (Verstraete, Murg, and Cirac, 2008). T

2 Theory

2.1 Tensor networks

TODO notation from https://arxiv.org/pdf/1905.01330.pdf

2.2 Modelling many-body physics

todo work as Ansätze

2.3 Numerical implementation

https://quimb.readthedocs.io/en/latest/examples/ex$_t n_t rain_c ircuit.html$

[1]

3 Results

todo

Figure 1: <caption>

4 Summary

Todo

TODO https://github.com/google/TensorNetwork
https://arxiv.org/pdf/1905.01331.pdf

References

[1] C. Roberts, A. Milsted, M. Ganahl *et al.*, *TensorNetwork: A Library for Physics and Machine Learning*, 2019, arXiv: `1905.01330`.