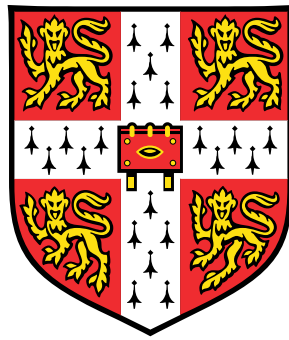# Optimal Importance Sampling in Quantum Monte Carlo for Lattice Models

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This dissertation is submitted for the degree of
Master of Philosophy in Scientific Computing

St. John's College   April 2021

I would like to dedicate this thesis to . . .

Declaration

I hereby declare that except where specific reference is made to the work of others, the contents of this dissertation are original and have not been submitted in whole or in part for consideration for any other degree or qualification in this, or any other university. This dissertation is my own work and contains nothing which is the outcome of work done in collaboration with others, except as specified in the text and Acknowledgements. This dissertation contains fewer than 15,000 words including appendices, figure legends, and tables.

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Blaž Stojanovič
April 2021

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Acknowledgements

And I would like to acknowledge ...

Abstract

This is where you write your abstract ...

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Nomenclature

Acronyms / Abbreviations

CNN   Convolutional Neural Network

DL   Deep Learning

DMC   Diffusion Quantum Monte Carlo

GAN   General Adversarial Network

ML   Machine Learning

NN   Neural Network

QMC   Quantum Monte Carlo

VAE   Variational Autoencoder

VMC   Variational Quantum Monte Carlo

Chapter 1

Introduction

1.1 Quantum Monte Carlo

hello? [1]

1.2 Why do we Quantum Monte Carlo

1.3 Where does Machine Learning come in?

Chapter 2

Variational Autoencoders

2.1 Reasonably long section title

Chapter 3

My third chapter

3.1   Convolutions

References

[1] Kingma, D. P. and Welling, M. (2013). Auto-encoding variational bayes. *arXiv preprint arXiv:1312.6114*.

Appendix A

Jax ecosystem

Appendix B

Additional results