Extracting exited states with machine learning in Lattice QCD

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Abstract

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1 Introduction

2 Theory

A large part of Lattice QCD revolves around the attempt to in trying to extract states, particularly exited states. Problems with this is that they are highly correlated and can be difficult to isolate. Techniques to remedy this exists, in particular the variational methodcite here!! . We will present an alternate method using what method? . But in order to begin, let us first begin by looking at what an exited state is and how a novel quantum mechanical approach can be used to illustrate the problem.

2.1 Quantum mechanical exited states

Let us begin with looking at a toy example, namely the path integral as formulated in quantum mechanics. Consider quantum mechanics in one dimension where we start at an initial position eigenstate $|x_i\rangle$ at time t_i and end up at a final position eigenstate $\langle x_f|$ at time i_f,

$$\langle x_i| \tag{1}$$

Appendices

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