Reinformcement Learning for Efficient Resource Allocation Between Bayesian Estimation and Operation in Quantum Computer Limited by Low-Frequency Noise

Jan A. Krzywda* and Evert van Nieuwenburg
$\langle aQa^L \rangle$ *Applied Quantum Algorithms, Lorentz Institute and Leiden Institute of Advanced Computer Science, Leiden University, P.O. Box 9506, 2300 RA Leiden, The Netherlands*

I. INTRODUCTION

Intro Uncontrolled drift of Hamiltonian parameters results in temporally correlated noise that affects quantum computation. It

Such drift can be modeled as a unknown term in the Hamiltonian, which if averaged over realisations give rise to a decoherence. In many cases the noise is temporairly correlated, which means that the noise at time t is correlated with the noise at time $t + \tau$.

With temporairly correlated noise, fast fluctuations are crucial for the qubit operation, while slow fluctuations can be used for learning.

* j.a.krzywda@liacs.leidenuniv.nl