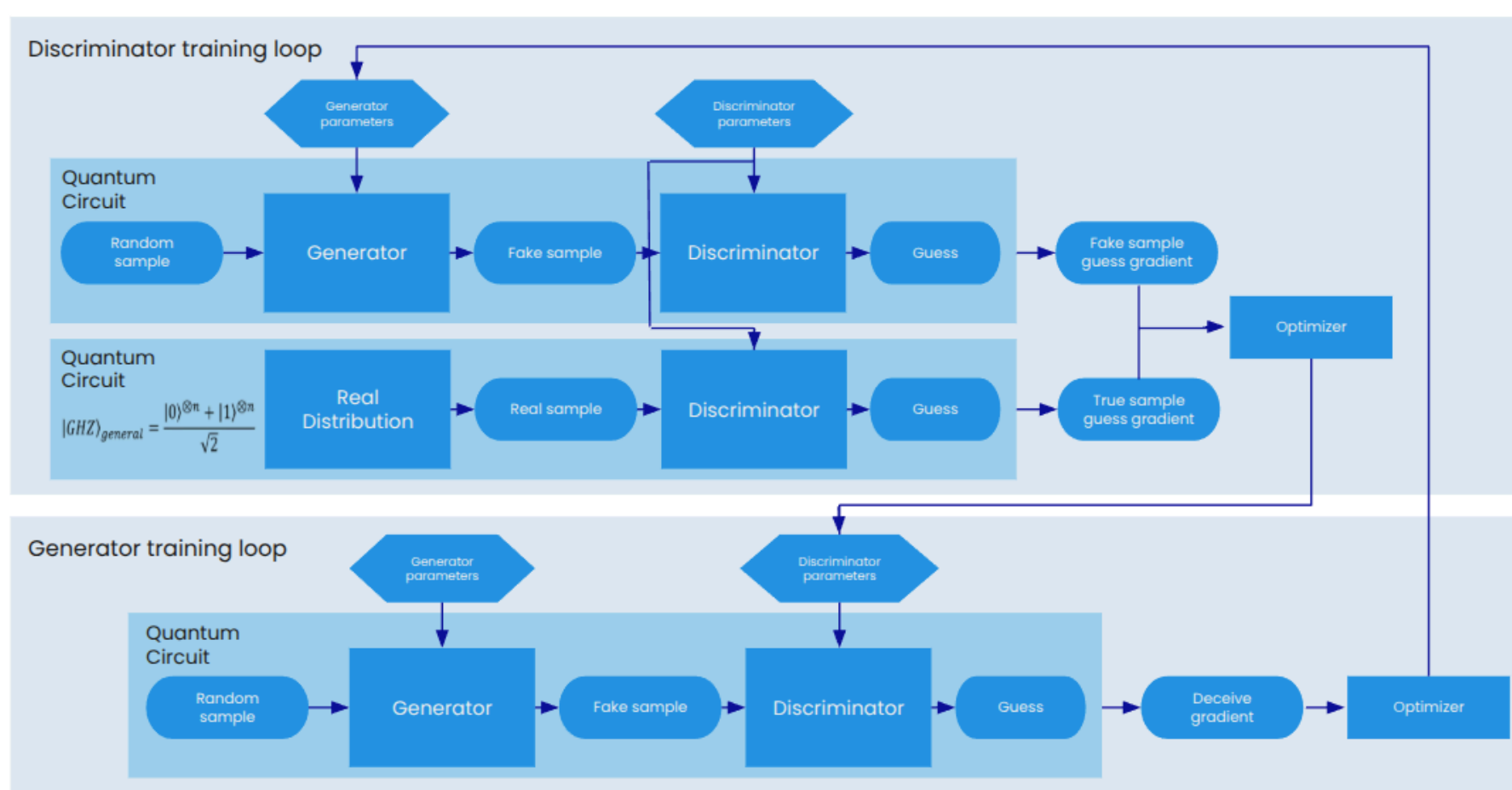


DEVELOPMENT AND EVALUATION OF FULLY QUANTUM GENERATIVE ADVERSARIAL NETWORKS ON IBM QUANTUM HARDWARE

BY BEÑAT BURUTARAN MAIZ

ABSTRACT

This thesis presents the design, implementation, and evaluation of a Fully Quantum Generative Adversarial Network (QGAN) architecture executed on IBM Quantum hardware. In contrast to hybrid approaches, this model employs quantum circuits for both the generator and discriminator, while classical optimization techniques guide the training process. The following image shows the architecture of the implementation of the Fully Quantum GAN model.



RESULTS

The following results are from execution in IBM Sherbrooke quantum hardware.

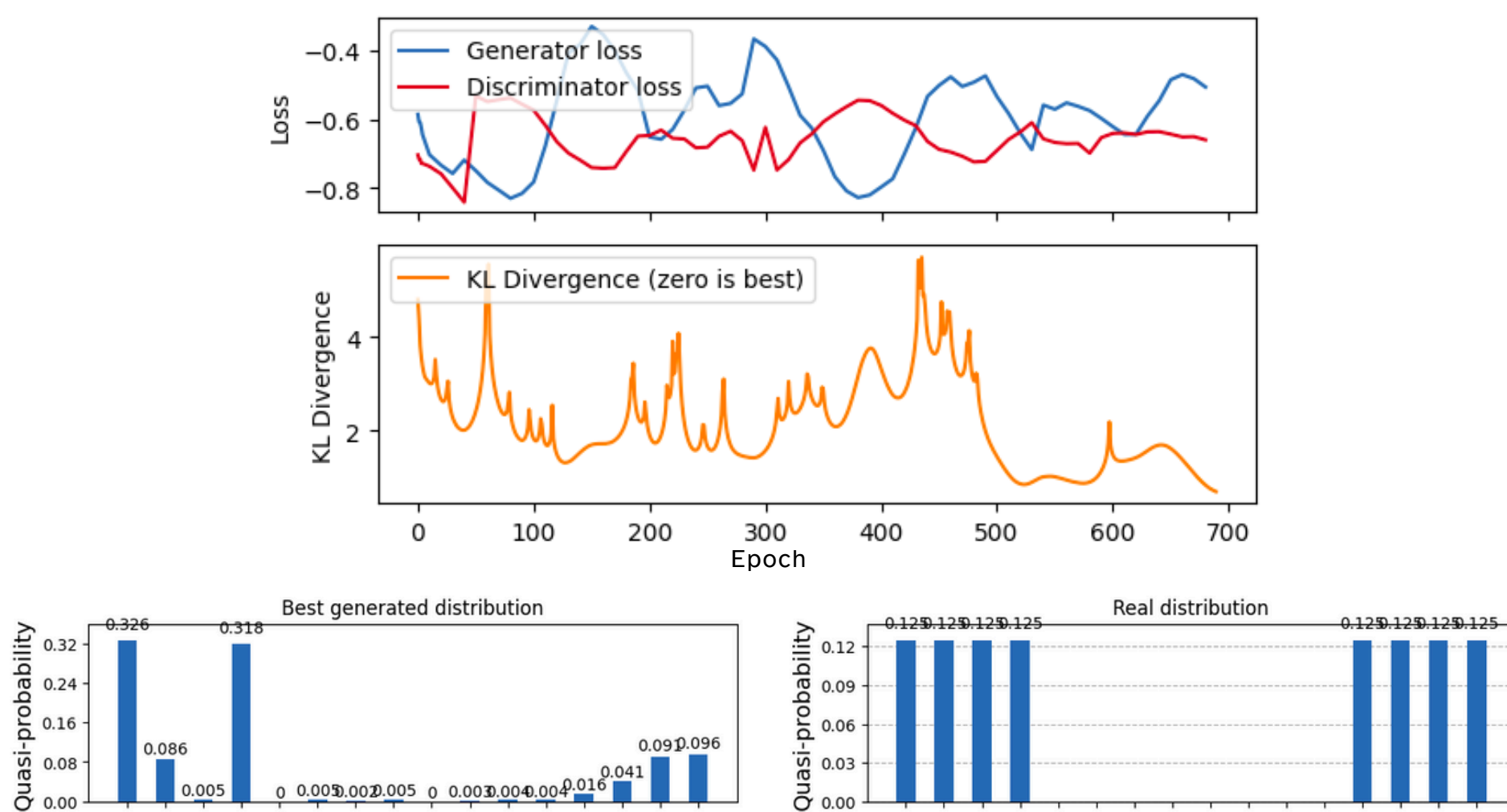


IMAGE TRAINING

The model has been trained to generate grey gradient images. The following pictures are examples of the results obtained via amplitude encoding with 4 qubits and angle encoding with 9 qubits, respectively.

