

AUTHOR: J. Walker and J.F. Annett

TITLE: The Effects of Noise on the Entanglement Levels of a Two Charge Qubit System

ABSTRACT:

Small superconducting islands have been put forward as a possible physical realisation of a quantum computer. While superposition states corresponding to single qubit systems have been demonstrated experimentally, the same cannot be said of entangled states between two such qubits.

We show here a simple system of two Cooper Pair Boxes (CPBs) coupled capacitively, and a sequence of voltage pulses that should lead to the charge states of the boxes being entangled. We investigate the effect of inaccuracies in the applied voltage pulses in order to ascertain how these may decrease the level of entanglement of the final state of the system.