Performance requirements for ensemble implementations of quantum algorithms DAVID COLLINS, Physics, Mesa State College — We consider the statistical performance of quantum algorithms when implemented on ensemble quantum computers. In particular we consider an ensemble quantum computer initially in a pseudo-pure initial state and determine the minimum polarization needed so that the quantum algorithm outperforms classical probabilistic competitors. We propose a general method for finding the minimum polarization and apply it to single bit output algorithms such as the Deutsch-Jozsa algorithm and the multiple output bit Grover search algorithm.

David Collins
Physics, Mesa State College