

## Algorithmic Trading Strategy High-Level Technical Documentation:

### Where is the Quantum speedup? Which part is classical?

Quantum speed-up implementation of is the real-time analysis of handling complex systems and more importantly real-time complex **asset relationships in a multiplicative matrix of the top PCA1 feature for hundreds or thousands of assets** in a **mixed multiplicative covariance matrix**: a parallelized matrix multiplication of each asset, algorithmic strategy, and portfolio's PCA 1, 2 values (real-time streaming HF data for top eigenstates, most explanatory variables in dataset), each stream representing a column (feature) in a covariance matrix = **an easy to manage, scalable matrix of 1,000's of variables using quantum advantage**, clean-executable trading programs to track, quantum machine learning on streaming data (PCA-level stability), execute trades on most-explanatory signals in combined matrix, and AWS cloud storage to track/tweak ML hyperparameters (stability in PCA 1 and 2 values) for: underlying asset performance, algorithmic strategy performance, portfolio performance, to as complex as the largest released qubit system and latest error-correction methods allow.

**Result: A simplistic, streamlined Quantum Automated Trading System (Q-ATS), with a retail-trader friendly UI/UX cloud-iOS platform.**

Using classical datasets (historical datasets train/test), historical high-frequency and eventually real-time high-frequency equities, etc to build any trained algorithmic trading strategy. The quantum mid-circuit measurement is the same counterpart: mid-circuit measurements of these changing PCA1 features intraday are reflected in qubit gate operations (i.e. ry, pauli-z, etc) to reflect PCA1 feature changes intraday in infinite states (complex state vector).

\*Can pass this to investors for the Quantum Advantage question