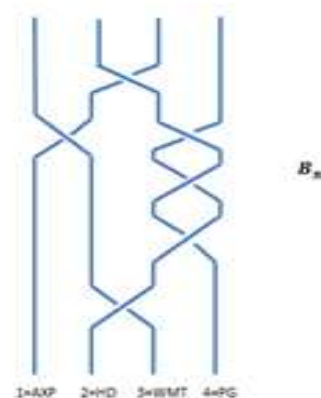
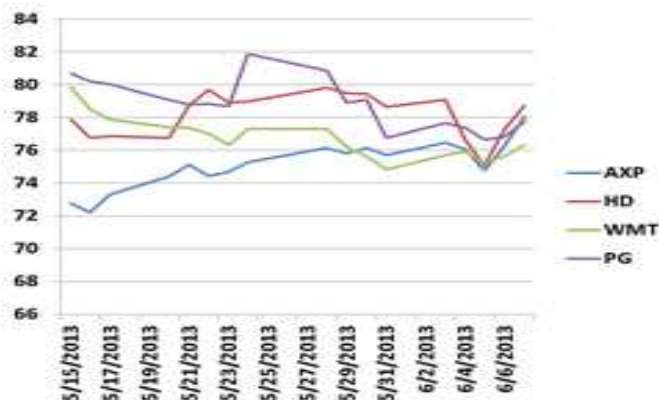


Topological Quantum Computer decodes the Stock Market Behavior

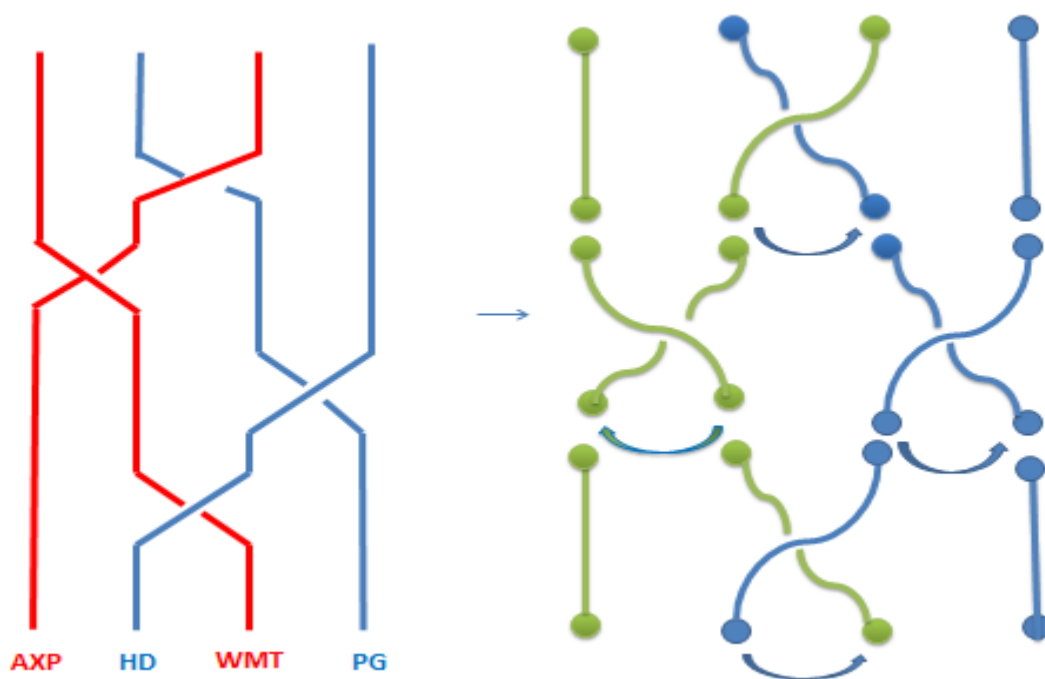
R. Feynman's "crazy" idea of a quantum computer that could simulate the probabilistic behavior of subatomic world seems to be "crazy enough" to fit in the stock market landscape. The quantum computer in its newly topological form can effectively simulate the stock market behavior encoded in the braid of stocks diagrams by manipulating pairs of quasi-particles, called non-abelian anyons, in braided trajectories. The outcome of quantum computation reflects the probability of the future state of stock market.

A surprising image of the stock market arises if the price time series of all *Dow Jones Industrial Average* stock components are represented in one chart at once. The chart evolves into a **braid representation of the stock market** by taking into account only the crossing of stocks and fixing a convention defining overcrossings and undercrossings.



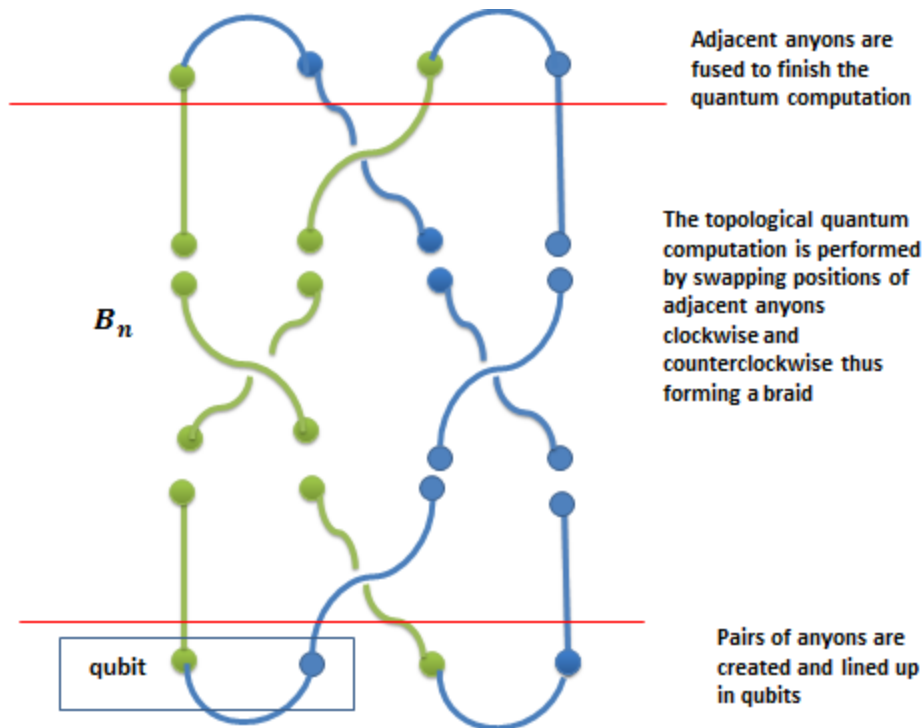
It can be seen in the figure above a chart containing a fraction of 4 stocks components of Dow Jones Industrial Average pictured in one chart at once (in the left) and the **braid diagram** of the same stocks (in the right).

The braid of stocks prices has a remarkable connection with the **topological quantum computer**. Using pairs of quasi-particles, called non-abelian anyons, having their trajectories braided in time, topological quantum computer can effectively **simulate the stock market behavior encoded in the braiding of stocks**. The figure below depict a braid representation of 4 stocks along with the same braid obtained by manipulating 2 pairs of non-abelian anyons clockwise and counterclockwise as it is shown by the arrows.



The typically quantum computation, similar to run an algo trading code, consists in creating pairs of anyons out of the vacuum, line them up initially in qubits, braid their trajectories to replicate the stock market behavior and finally fusing them together to close the process.

The topological quantum computation of the stock market braid is shown in the figure below.



The outcome of running the **quantum algo** reflects the probability of the future state of stock market. The probability depends only on the Jones polynomial of the knot formed by plat closing the quantum computation. The **Jones polynomial of the knotted stock market** acts, making a parallel with the common financial literature, in a topological quantum computation as a counterpart of a classical technical indicator in trading the stock market. The type of knot stock market formed is an indicator of its future tendencies.

The whole story can be read in- <http://arxiv.org/abs/1406.3531>.