Axiom of Choice extended to include Relativity

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Abstract

Axiom of Choice is applied to Quantum Entangled Singularities (QESdunn) and treats quantum entanglement as two different but similar vast systems of causality that differ by one or a few causal differences. This potentially provides an experimentally verifiable relationship between non-relativistic causality and relativistic causality.

Introduction

To construct an experiment, the attempt is to disprove a suspected relationship. Failing to disprove the relationship then the relationship holds merit. When referring to attempting to contention, the reference is regarded highly and is being used as a reference to experimentally disprove efforts cited here.

Reference in contention: Quantum Causality Threshold and Paradoxes, Florentin Smarandache
If an entanglement is the difference between systems of causality, then the paradox seems not to exist. The cones resolve to a determinant state.

> **"1. Perfect simultaneousness: Let's consider two entangled particles A and B. {Schrödinger introduced the notion "entangled" in order to describe the non-separable states [Belavkin (2002)]}. At the beginning, both are immobile, in the same space S(A,B) and time t (simultaneously), and none of them is in the causality cone of the other."**

The following is intended to model the Universe in a quantum computing environment; and when entangled, provide warping of space/time relationships.

Alternate perspective; preliminary assumptions

Systems of Space-time of uniquely characterized properties of a "to be" entangled particle are entangled with non-relativistic artifacts (non-observable). The act of entanglement of any particle (used loosely here to describe any target of entanglement) is either the additive or destructive change in causal state of two systems of largely similar systems of entanglement. This is modeled as the entire universe existing as a single bound complex causal state, but relativity formed from dispersions of connectedness in the single (scalar) complex causal artifact.

Systems of observable entanglement can be relevant to any property of a particle, but the particle "observable" outcomes may be different. "Systems of relativity" moderate the evolving components of connectedness of the single causal artifact. Very similar to how a quantum computer will be constructed; parallel processing via the forming of relativistic singularities and causal systems forming like crystalline growth in a uniform media with

interspersed impurities; a multi-dimensional snow flake with a myriad of outcomes dependent upon the impurities (singularities).

The attempt is to correlate Set Theory of Axiom of Choice to a proposal for relativity in a generally causal environment. To reiterate, the system described has many systems of relativity aliased from a system of singularities. Some of those systems include what we consider scalar physical constants, from which each of the sub-atomic particles are moderated, observable terminus of entanglement, terminus of photons, effects of duality and related fringe patterns … everything observable.

Discussion

Proposal: Mathematics has a non-reducible limit (Axiom of Choice extended to include relativity)

Proposed is that all mathematics shares a common causal core, from which all mathematics can be built in the quantum computing environment. Emphasis here is that current quantum computing defines quanta as being the fundamental element in quantum computers. Here their quanta are characterized as similar vast systems of causality moderated by systems of singularities that differ by one or a few causal differences.

All mathematics is causal, even probability. Causal not in terms of time, but rather logic. Without consistent relationships, mathematics has limited value; and the reason thoroughly constraining limits of use must be identified for the use of all mathematics or the mathematics expressions are not broadly useful.

Proposed is that Quantum Causality is made up of two fundamental properties: evolving, and its counterpart, non-evolving causality. There are other elements to support quantum computing, but those will be addressed separately. This, then that. The manner of evolving is irrelevant just so that it is consistent. From these simple foundations any and all mathematics can be built from inside the relativistic quantum computing environment.

The reason why this might be significant.

Physics is modeled using math. If using quantum causality to model the universe is ineffective, then potentially the universe cannot be accurately modeled with math and another form of representation will need to be developed that is different than mathematics.

http://en.wikipedia.org/wiki/Axiom_of_choice

Applying Axiom of Choice to the system of causality described above. A fundamental component Xi of a Set S where i has only 1 value to represent a fundamental unit of non-evolving causality, and Y1 to represent a fundamental unit of evolving causality, then the static state of one set is Si(X1, Y1).

For Si where i is any finite number, then a state of Si can be formed as Si(X1), Si(Y1), or Si(X1,Y1) but in no set does Si(0) nor Si(0,0) become a legitimate member in a totally known and connected system of causality. Noted here is that only one causal artifact exists in this quantum computing environment. However, determinant methods

of chaining causal connectedness allows for vast interactive systems of connected causality. The one causal artifact provides a scalar relationship to all related systems of causality.

Also noted is that direct recursion is not allowed. Entropy requires that the scalar systems evolve. Singularities may be continuously evolving internally, but the external connections evolve in limited ways like that of crystal growth in a media with impurities. The quantum computing output cannot directly feed the input, a causal shift of more than one step event is required to be able to complete a causal recursion; initially thought of as entropy. However, magnitude assertion drives evolving causality into more broadly exposed systems of causality. Magnitude assertion is represented, but whether both evolving and non-evolving causality exert magnitude assertion, and in what combinations, is not as yet significantly considered.

The foundation components of X1 and Y1 provide three potential states in combination.

Other sets are present, but all other sets are composed of these fundamental sets.

The Axiom of Choice states that to be a member the sets of consideration must be non-empty. As shown above, if causal states are connected, the zero states do not exist and are not part of the considered set notation.

As stated above in the linked resource, Axiom of Choice is not applicable in all considerations; or at least not easily related. This assumes then that through some permutations of mathematics that sets that are inclusive of zero members are included to better assist in some representation (perspective). Most common of which is dealing with systems of extraordinarily large numbers. Mathematics uses a form of set theory to create systems of manageable approximations for vast systems of interactions; i.e. relativity. Noise and Error are given a reference in relation to zero.

Relativity uses zero as a member to define relative differences. In non-relativistic spaces zero has no legitimate representation; systems of causal connected systems are always present in the form of numbers of quantum step events relative to a system of connections (all non-zero).

When a system is self-referencing (relativity), then zero comes into play as a member to demarcate the boundaries of consideration.

“Relativity” has no absolute references, but can be tied back to absolute referencing in set theory. If a quantum entanglement is one or more systems of causality that differ by one or a few causal states, then potentially experimentation can reveal underlying non-relativistic causal artifacts; i.e. investigating space and time relationships different than observable.

"According to Einstein’s Theory of Relativity, when a particle is moving with respect to the other, its time and space axes appear inclined from the perspective of the other particle, modifying what for this other particle is “before” or “after”, but their causality cones remain the same."

This is a perspective from within the relativistic environment. Stepping outside of the environment, the number of cyclic quantum causal step events in a connection schema, relative to different schema, form relativistic artifacts internally; but are seemingly random systems of relationships of causality outside the system. The aliased

differences of causal step events relative to relativistic singularities form and evolve internal systems of references (space-time relationships; i.e. modal particles and related fringe patterns); i.e. deterministic relationships and no causality cone.

The speed of the causal artifact is irrelevant, so long as the causal properties of evolving and non-evolving causality are consistent. Relativistic speed (meters/sec or space/time) becomes instantaneous when causal artifacts are not related to space, or not related to time, or not related to space or time. In a causal environment, causality need not be related directly to space-time. Thus this is displayed in quantum entanglement and double-slit experiments.

The mechanism to correlate quantum causality with parallel processing of modeled singularities is self-organizing chaos. Parallel processing in a causally deterministic environment presents as chaos, but is instead abstractions of moderated systems of causality. The only causality systems observable are those with relativistic reference; repeating of evolving systems. Examples: Try to identify anything detectable that is not evolving at a fundamental level. A photon in route does not change state, and is not observable. None of the sub-atomic particles are directly observable; they become visible as part of evolving interactions.

Initially, quantum mechanics and the related math will be used to describe the Relativistic sub-atomic systems. Causality will then be introduced as a method of isolating relativity while still providing for the experimental outcomes. The resulting mathematic derivations are hoped to provide insight into the non-relativistic causal characterization of quantum entanglement. Many attempts are likely to be seen and reworked here as descriptors of causality and aliasing are introduced into probability frameworks.

The uniform field model is used extensively as a foundation in quantum physics. The use of the uniform field in mathematically solving many-body-problems obscures the influences of causality. The initial attempt will be to particulate the uniform field based upon systems of singularities as described in other efforts.

The greater of the difficulties here is to reasonably identify the constraints of the mathematic systems used relative to observable experimentation, while attempting to isolate relativity from the relationships. The mathematics and related constraints are expected to transmute depending upon the interactive nature of the systems of causality involved.

Suspected is that nuclear elementary sub-atomic particles are the relativistic indicators of the non-relativistic functioned loops of entanglement. "Loops" is a term used to describe a system of interactive control but it does not describe the actual structure of the interactive system of entanglements. "Loops" is just a convenient term to associate common potential utility of String Theory, Neural Networks, and Control Theory. The understanding of the ultimate structure of entanglements may evolve into something quite different as experimental results accumulate.

Sub-atomic particles are broader abstractions (relativistic singularities) of scalar systems of influence by causal singularities (physics constants). This being why certain combinations combine, and others dissociate.

Initially proposed is that physics constants strongly regulate subatomic particle properties (causal systems of interactions).

The physical intents of the foregoing are to provide separable experimental influence of causal factors to provide a bending of space/time in macroscopic observable terms. The causal network of "non-relativistic" quantum entanglement connections (causality) are suspected to form what is referred to as the Higgs Field and other systems of relationships.

References

1. Smarandache, Florentin, PhD. "Quantum Causality Threshold and Paradoxes." *UNM Gallup*. N.p., n.d. Web. 06 Feb. 2014. <http://www.gallup.unm.edu/~smarandache/QuantumCausalityThreshold.pdf>.
2. Dunn, James. "James Dunn's Books and Publications Spotlight." *Building Universes - Relativity from Quantum Causality*. Lulu Press, n.d. Web. 06 Feb. 2014. <http://www.lulu.com/spotlight/building_universes>.
3. Dunn, James. "Quantum Entangled Singularities." *QES Archive*. N.p., n.d. Web. 06 Feb. 2014. <http://qesdunn.pbworks.com/>.

In Memorial

In searching for QESdunn a book will be found: Building Universes-Relativity from Quantum Causality. The book is related thought mapping and should only be referenced if experimental outcomes show significant parallelism between experimental intents and results. This was provided to fund experimentation, and as a form of archive to benefit my family once I pass.