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Jonathan Langdale

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The illusion of correlation & closing the free will loophole

Are you ready to have your world view rocked? Enjoy whatever mystery remains while it lasts, because it's not going to exist much longer. A real world plausible experiment has been proposed to close the free will loophole for Bell's inequalities. This is a test to prove something I've long believed. Determinism implies that the detector settings themselves are deterministic.

"... a scenario that, however far-fetched, implies that a physicist running the experiment does not have complete free will in choosing each detector's setting."

"It sounds creepy, but people realized that's a logical possibility that hasn't been closed yet," says MIT's David Kaiser, the Germeshausen Professor of the History of Science and senior lecturer in the Department of Physics. "Before we make the leap to say the equations of quantum theory tell us the world is inescapably crazy and bizarre, have we closed every conceivable logical loophole, even if they may not seem plausible in the world we know today?"

Now Kaiser, along with MIT postdoc Andrew Friedman and Jason Gallicchio of the University of Chicago, have proposed an experiment to close this third loophole by determining a particle detector's settings using some of the oldest light in the universe: distant quasars, or galactic nuclei, which formed billions of years ago.

"I think it's fair to say this [loophole] is the final frontier, logically speaking, that stands between this enormously impressive accumulated experimental evidence and the interpretation of that evidence saying the world is governed by quantum mechanics," Kaiser says.

The result of this experiment will probably rub a slew of people the wrong way, either way it goes.

<http://arxiv.org/pdf/1310.3288.pdf>

http://en.wikipedia.org/wiki/Bell's_theorem



Bell's Inequality And The Speed Of Light: Quasar Findings Might Close The 'Free Will' Loophole

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Amirudin Ridwan 1 week ago

If we just accept that "Spooky action at a distance" is real then everything's fine. The Universe is at the base Quantum Mechanical ie: probabilistic.

Jonathan Langdale 1 week ago

+[Amirudin Ridwan](#) I think we have to say more than it's realness, we have to come up with a mechanism. Along with a missing quantum gravity theory, this just further shows quantum mechanical incompleteness.

Whenever explains these things would naturally encompass the perception of QM probability from decoherence. That doesn't mean that it's probabilistic underneath. Einstein's general theory is drastically different than Newton's view of space & time.

[Amirudin Ridwan](#) 1 week ago

+[Jonathan Langdale](#) yes of course. My point is that it is real which removes the paradox. All the experiments so far do show that it is real. +1

[Mark Welch](#) 1 week ago

I'm confused about something here. If the free will loophole turns out to be closed, is there any possibility that retrocausality* might play a role in our "hidden variables"? In other words, might it be possible that the act of observation might somehow create its own causal chain, sometime before $T[0]$ /Big Bang? Is the idea of a parallel, negatively-directed timeline useful here?

I realize that retrocausality is not a popular notion among physicists, and makes almost zero sense in terms of everyday human events, but I read the page, and it just made me wonder.

* <http://en.wikipedia.org/wiki/Retrocausality>

[Jonathan Langdale](#) 1 week ago

I was thinking about this view the other day. If everything is everywhere at all times with some given probability no matter how small, it seems interesting to consider that fundamental might be the whole and not the small finite components, like a top down causal chain.

The other thing I would say is that if we're holographic with fundamentality less dimensionality, there is no reason to suspect the time dimension of $2+1$ maps time the same. Our notion of curved space-time would be scrambled into this background plate, which might then have it's own perception of time. This means the time evolution of a holographic $3+1$ entity would exist as a loaf of bread in $2+1$, every moment of $3+1$ time existing at the same $2+1$ time.

This might mean that there is no true direction or sign for $3+1$ time. In terms of space-time locality, there is no negative locality, so why is there negative time? That means it's neither positive nor negative. +1

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