Re: Seth Lloyd and Stephen Wolfram both claim our universe acts like a quantum computer.

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- *From*: "malibu" <vegan16@xxxxxxxxxxxxx>
- *Date*: 10 Jan 2007 08:41:19 −0800

Sam Wormley wrote:

> malibu wrote:
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> > a. QM is shit.
> >
> > b. There will never be a quantum computer.
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> Ref: http://en.wikipedia.org/wiki/Quantum_mechanics
>
> "Quantum mechanics is a fundamental branch of theoretical physics with wide applications in experimental physics that replaces classical mechanics and classical electromagnetism at the atomic and subatomic levels. It is the underlying mathematical framework of many fields of physics and chemistry, including condensed matter physics, atomic physics, molecular physics, computational chemistry, quantum chemistry, particle physics, and nuclear physics. Along with general relativity, quantum mechanics is one of the pillars of modern physics".
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> PHYSICS NEWS UPDATE
> The American Institute of Physics Bulletin of Physics News
> Number 801 November 16, 2006 by Phillip F. Schewe, Ben Stein,
> and Davide Castelvecchi www.aip.org/pnu
>
> UNWIRED ENERGY. Recharging your laptop computer or your cell phone might one day be done the same convenient way many people now surf the Web−−−wirelessly. At this week's AIP Industrial Physics Forum, in San Francisco, Marin Soljacic (MIT) spoke about how energy could be transferred wirelessly by the phenomenon of induction, just as coils inside power transformers transmit electric currents to each other without touching. The idea of wireless energy transfer is not new. Nikola Tesla was working on the idea more than a century ago

but failed to develop a practical method.
In the new MIT scheme, a power transmitter would fill the space around itself with a non−radiative electromagnetic field−−−meaning that its energy would not ripple away as electromagnetic waves. Energy would only be picked up by appliances specially designed to resonate with the field; most of the energy not picked up by a receiver would be reabsorbed by the emitter. Contrary to more traditional, radiative means of energy transmission such as microwaves, it would not require a direct line of sight. It would be innocuous to people exposed to it. With designs proposed by Soljacic in a paper with Aristeidis Karalis and John Joannopoulos, an object the size of a laptop could be recharged within a few meters of the power source. Soljacic (m...@xxxxxxxxxxxxxxxxx) and his MIT colleagues are now working on demonstrating the technology in practice. (solja...@xxxxxxx, Tel: 617−253−2467)

ENTANGLED IONS HAVE BEEN "PURIFIED" at record levels by NIST researchers, providing another tool that will be helpful in constructing real−world quantum computers. Entanglement is a quantum−mechanical property in which multiple particles, such as photons or atoms, become interlinked so that measuring a previously undetermined property in one particle instantly determines the property of the others. Particles must be entangled for them to work together in a quantum computer. However, entanglement is a fragile property that is easily destroyed by outside disturbances, such as stray magnetic fields, which can demolish this special quantum property through a process known as decoherence.
Even when particles become entangled, experimenters might not get the results they desire, especially if the entangled pairs are further manipulated. For example, if researchers would like entangled particles to have the same values of "spin" (e.g., spin−up) when they're finally measured, they're not going to get this desired "correlation" 100% of the time. This is troublesome, as quantum computers and other quantum devices depend on particles that are entangled in the intended fashion.
To combat this last entanglement complication, enter the idea of "purification," first proposed by Charles Bennett of IBM and his colleagues a decade ago (Bennett et al., Physical Review Letters, 29 January 1996) and first
demonstrated with pairs of photons (Kwiat et al., Nature, 22 February 2001). Essentially a distillation process, purification improves the probabilities that the entangled particles will have the desired correlations (e.g., the same value of spin). In the process, researchers can verify that they have indeed purified the particles.

In the NIST demonstration, ultraviolet lasers first entangle two pairs of beryllium ions. The lasers then "cross−entangle" a member of the first pair with a member of the second. In the process the lasers perform a number of "purifying" operations that raise the chances that the ions will be properly correlated. Measuring the

> cross−entangled pair provides information on whether the other two entangled ions were purified. The researchers found that the purification process worked 30% of the time in entangled ions, much higher than previous demonstrations involving photons.

OK, I'll give QM a 30% score− but that's stretching it.

John

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