

sci.physics: Re: The start of the big bang must be frame dependent.

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From: init 3 (*init3_at_init3.init3*)

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Jeff Relf wrote:

- > *Likewise, professor Davies' theory is*
- > *an even finer tweak,*
- > *i.e. for objects that are even more massive,*
- > *compared to humans,*
- > *such as at the very start of the big bang.*
- > *(Which start is relative to us humans, of course)*

Sorry, Jeff, but real science is biting your tailfeathers.

What you have referred to is called the 'Weirdness Barrier':

<http://www.newscientist.com/hottopics/quantum/quantum.jsp?id=23390700>

But Schwab hopes to resolve the issue quickly. With Andrew Armour, now at the University of Nottingham, and Miles Blencowe at Dartmouth College in Hanover, New Hampshire, he has built a silicon beam whose length is just a fortieth of the width of a hair. This is small by our standards, but vast compared with a buckyball. Next to the beam is a strip of aluminium called a Cooper pair box attached by insulating contacts to an aluminium loop (see Graphic).

- > *That's relativistic mass, which is not at all Newtonian.*

I was speaking metaphorically. Einstein's thought experiments were all about trains and elevators. Highly Newtonian. Einstein basically added some fixes here and there and a paint job and that let Newton go for another century. But the free ride is over, baby.

- > *And, contrary to what many idiots think,*
- > *Einstein was the main founder of quantum physics...*
- > *hardly an antagonist.*

Chuckle, chuckle. Jeff, stop reading Physics for Idiots and get an education. Einstein /reluctantly/ added to quantum physics, all the while

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looking for that myterious Grand Unified Theory to help make things all nice and neat again, so people could get a good night's rest. Sorry, Charlie, only the best theories get to be quantum.

- > *What confuses the peanut gallery is that Einstein*
- > *(like most cosmologists then and now)*
- > *simply believed that randomness was*
- > *nothing more than a lack of information.*

Here's something really interesting. It relates quantum entanglement to *entropy* — and it works !!!

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

Given a general density matrix $\tilde{\rho}$, we can calculate the quantity where k is Boltzmann's constant, and the trace is taken over the space H in which $\tilde{\rho}$ acts. It turns out that S is precisely the entropy of the system corresponding to H .

The entropy of any pure state is zero, which is unsurprising since there is no uncertainty about the state of the system. The entropy of any of the two subsystems of the entangled state discussed above is $k \ln 2$ (which can be shown to be the maximum entropy for a one-level system). If the overall system is pure, the entropy of its subsystems can be used to measure its degree of entanglement with the other subsystems.

It can also be shown that unitary operators acting on a state (such as the time evolution operator obtained from the Schrödinger equation) leave the entropy unchanged. This associates the reversibility of a process with its resulting entropy change, which is a deep result linking quantum mechanics to information theory and thermodynamics.

- > *You concluded,*
- > *" Now the shit has hit the fans*
- > *and we're right around the corner from teleportation.*
- >
- > *The /spooky/ question is: What was Einstein scared of ? "*

Einstein and Newton are *not* something to be added to. The very foundation of Newton — the discrete calculus — is something I called into question in my Junior Year high school physics class. I asked, how can you measure the /instantaneous/ speed of anything when it assumes that time is gone to zero. The answer: a deafening silence !

Quantum is an /all/ encompassing theory — and it was only understood, prior to 1900, by mystics, not physicists.

- >
- > *Things like quantum tunneling are*
- > *only about incomplete information...*
- > *information that is missing due to speed,*

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> *tininess, remoteness, etc.*

>

> *And as such, they do not relate to our reality, as humans.*

Once again. you should read something written after 1989 when it comes to physics. Then feel free to participate.

Here's something for you to read about in the meantime:

<http://www.newscientist.com/hottopics/quantum/quantum.jsp?id=ns99991888>

Teleporting larger objects becomes real possibility

The dream of teleporting atoms and molecules – and maybe even larger objects – has become a real possibility for the first time. The advance is thanks to physicists who have suggested a method that in theory could be used to "entangle" absolutely any kind of particle.

Quantum entanglement is the bizarre property that allows two particles to behave as one, no matter how far apart they are. If you measure the state of one particle, you instantly determine the state of the other. This could one day allow us to teleport objects by transferring their properties instantly from one place to another.

Until now, physicists have only been able to entangle photons, electrons and atoms, using different methods in each case. For instance, atoms are entangled by forcing them to interact inside an optical trap, while photons are made to interact with a crystal.

"These schemes are very specific," says Sougato Bose of the University of Oxford. But Bose and Dipankar Home, of the Bose Institute in Calcutta, have now demonstrated a single mechanism that could be used to entangle any particles, even atoms or large molecules.

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