

# Re: Why it is impossible to reverse temporal ordering in superluminal information transfer.

**Source:** <http://sci.tech-archive.net/Archive/sci.physics.relativity/2004-11/0483.html>

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"RP" <[no\\_mail\\_no\\_spam@yahoo.com](mailto:no_mail_no_spam@yahoo.com)> a écrit dans le message de news:2uo2foF2cct0tU1@uni-berlin.de...

Chaverondier

> > *I sketched a thought experiment to provide a more detailed  
> > presentation about the issue of quantum measurement determinacy  
> > experimental testing on the links <http://perso.wanadoo.fr/lebigbang>  
> > and <http://perso.wanadoo.fr/lebigbang/epr.htm>*

RP

> *Your English is difficult to follow, but I believe that I've understood  
> it well enough, and it seems to correspond to my own conclusions. Just  
> to check: Would you say that your view is more or less equivalent to the  
> collapse of the wave function being, what amounts to, the emission of a  
> negative photon with instantaneous propagational speed?*

Chaverondier

I don't understand what you want to say here.

RP

> *OTOH, I haven't seen yet where this provides faster than  $c$   
> information transfer in the forward time direction.*

Chaverondier

The idea is that one. I assume that quantum measurement indeterminacy be only an apparent indeterminacy stemming from the lack of knowledge of the quantum state of the measuring apparatus and the environment interacting with it (ie a deterministic contextual hidden variable interpretation of quantum indeterminacy instead of a a fundamental indeterminacy)

Now, the idea is that one.

\* Let us assume for instance that the outcome of the measurement of the polarization of  $45^\circ$  polarized photons by a  $0^\circ$  polarizer (for

instance by a crystal calcite blade) be actually uniquely determined by the quantum state of the polarizer and the quantum state of its environment.

\* let us assume that we are up to exert a drastic control on a sufficient part of these assumed causes of the hazardous  $0^\circ$  or  $90^\circ$  polarization outcomes, thanks to

- \* a high laboratory vacuum
- \* a very low temperature
- \* a high protection against electromagnetic radiations thanks to an electromagnetic shield
- \* a refined insulation against mechanical vibrations
- \* a very neat and very tiny crystal blade
- \* a vanishing gravity field ?
- \* an interacting environment in a Bose Einstein Condensate so as to control the quantum state of the environment of the calcite blade ?...

\* let us assume (in the framework of this thought experiment) that, thanks to a high polarization measurement frequency, we are up to measure two successive photons polarization before the causes (of the apparent randomness of the  $0^\circ$  or  $90^\circ$  polarization outcomes) have enough changed between these two successive polarization measurements.

In such a case, we should observe that two successive photons polarization measurement outcomes have a slightly greater chance being identical rather than being different.

This thought experiment can be improved if an array of periodically spaced photons hits the array of periodically spaced polarizers which are the nodes of the crystal blade. Indeed the test of our deterministic contextual hidden variable interpretation of quantum apparent hazard would be the observation of a space and/or time correlation between successive and/or spatially close polarization measurements of our  $45^\circ$  polarized photons by our calcite blade.

As you can see, the same idea, applied in the framework of Alain Aspect experiment (drastic control of the environment of the "local" polarizer) would allow to send a self-correlation signal to the "far" polarizer provided the "local" polarizer be close enough from the generator of EPR correlated pairs of photons to be reached before the "far" polarizer (according to Aristotle space-time objective chronology).

Bernard Chaverondier

<http://perso.wanadoo.fr/lebigbang/epr.htm>

[http://perso.wanadoo.fr/lebigbang/no\\_communication.htm](http://perso.wanadoo.fr/lebigbang/no_communication.htm)

Quantum determinism or relativist locality ?