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Could Einstein Have Been Right After All?

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One of the most surprising aspects of quantum theory is that it tells us that we live in a nonlocal universe in which random correlations seem to appear instantaneously between arbitrarily distant locations. This idea was completely abhorrent to Einstein, who dismissed it as “spooky action at a distance”. So-called loophole-free experiments have confirmed nonlocality beyond any reasonable doubt in 2015. But have they really? In this talk, I shall argue that no experiment whose purpose is to confirm the predictions of quantum theory can possibly be used as an argument in favour of nonlocality because any theory of physics that does not allow instantaneous signalling to occur and has reversible dynamics (such as unitary quantum theory) can be explained in a purely local and realistic universe. What if Einstein was right after all?... Once again!

No prior knowledge of quantum theory will be assumed.

This talk is based on the original doctoral work of Paul Raymond-Robichaud while under my supervision. The proof of concept was published in the journal *Entropy* and is available open access at <https://doi.org/10.3390/e21010087>.

More involved mathematics can be found in <https://doi.org/10.1098/rspa.2020.0897> and culminates in <https://arxiv.org/abs/1710.01380>.

Is this abstract from experiment?

No

Name of experiment and experimental site

N/A

Is the speaker for that presentation defined?

Yes

Details

Gilles Brassard, Professor, Université de Montréal, Canada, <https://www.umontreal.ca>

Internet talk

No

Author: Dr RAYMOND-ROBICHAUD, Paul (ISI Foundation)

Co-author: BRASSARD, Gilles

Presenter: BRASSARD, Gilles

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