

EPR-like "funny business" in the theory of branching space-times

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Abstract

EPR-like phenomena are (presumably) indeterministic, but they furthermore suggest that our world involves seeming-strange "funny business." Without invoking any heavy mathematics, the theory of branching space-times offers two apparently quite different ways in which EPR-like funny business goes beyond simple indeterminism. (1) The first is a modal version of a Bell-like correlation: There exist two space-like separated indeterministic initial events whose families of outcomes are nevertheless modally correlated. That is, although the occurrence of each outcome of each of the two space-like separated initial events is separately possible, some joint occurrence of their outcomes (one from each) is impossible. (2) The second sounds like superluminal causation: A certain initial event can bear a cause-like relation to a certain without being in the causal past of that outcome. The two accounts of EPR-like funny business are proved equivalent, a result that supports the claim of each as useful to mark the line between mere indeterminism and EPR-like funny business.

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Keywords: branching space-times, EPR, indeterminism, cause, correlation, transition

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