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Causality in ”noncommutative spacetimes”

Friday, 16 September 2016 17:00 (25 minutes)

Drawing from the mathematical richness of noncommutative geometry, I will introduce the concept of an “almost commutative space-time” and show that it admits a sensible notion of causality. The latter does not affect classical causal relations in the space-time component, but it does induce highly non-trivial constraints on the “motion” in the “inner space”. I will illustrate the general concept on a simple model and relate the outcomes to a relativistic quantum effect - the Zitterbewegung. I will conclude with a brief outlook into the nature of the causal relation in truly noncommutative spacetimes expected to emerge at the frontier of quantum theory and general relativity.

Summary

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