Bell's Theorem, Uncertainty, and Conditional Events

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Abstract

This article explores a relationship between the generalized form of Heisenberg′s uncertainty relations and Bell-type inequalities in the context of their associated algebras. I begin by exploring the algebraic and logical background for each, drawing parallels and a noticeable symmetry. In addition I describe a thought experiment linking the conceptual foundation of one to a mathematical representation of the other. Finally, I explore the requirements for a more inscrutable relationship between the two pointing out the tantalizing questions this suggestion raises as well as potential answers. The purpose of this article is to show that there is more to this relationship than meets the eye and suggests that a very general Bell-like theorem can be interpreted as a limiting case of the broader generalized uncertainty principle.

Keywords:	Bell's theorem, uncertainty principle, conditional events, Boolean algebra, matrix algebra, causation
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