Can Quantum Mechanics be shown to be Incomplete in Principle?

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Abstract

The paper presents an argument for the incompleteness in principle of quantum mechanics. I introduce four principles (P0– P3) concerning the interpretation of probability, in general and in quantum mechanics, and argue that the defender of completeness must reject either P0 or all of P1– P3, which options both seem unacceptable. The problem is shown to be more fundamental than the measurement problem and to have implications for our understanding of quantum-mechanical contextuality.

Keywords:	Quantum Mechanics, Incompleteness, Contextuality, Time, Time Index, probability measure, one-place probablity measure, two-place probability measure
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