

Leibniz's *Monadology* and the Philosophical Foundations of Non-locality in Quantum Mechanics.

by

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Abstract:

One of the most troubling aspects of our understanding of modern physics, generally, and quantum mechanics, specifically, is the concept of “non-locality.” Non-locality appears in an entire class of experiments, including the so-called “two-slit” experiment. In these, particles and “quanta” of light can be emitted and absorbed individually. Yet in the way these particles or quanta traverse the space and time between emission and absorption, they appear to behave not as point particles, but as though they were distributed throughout the entire spatial volume and temporal extent of the experiment. That the phenomenon of non-locality has recently been corroborated over macroscopic distances of the order of 10 kilometers makes these effects all the more remarkable.

In this lecture, I shall review the experiments and arguments that have led to an acceptance of non-locality in modern physics, and will suggest that the concept of space and time that this understanding implies is consistent with Leibniz's *Monadology*, wherein our ideas of space and time are fundamentally different from those given to us by our intuitions.