The Uncertainty Principle (Revised)

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Abstract

This paper will argue for the expansion of the (Heisenberg) Uncertainty Principle (UP). Also, this paper will explore the cause of the UP based upon a general context not through any specific application thereof.

Keywords uncertainty, Heisenberg, interval, continuous, state, phase space, classical, quantum, mechanics

Uncertainty Is Continuous Numerical Flux

What is the cause of Uncertainty?

Regardless of the form they take (e.g., wave functions), uncertainty occurs as a consequence of assigning real values to observations.

(For demonstrative purposes only this paper will substitute real numerical values for all other real values.)

In any interval state, the assignment of a real value is done with fixed values that are defined, certain.

However, any assignment of a value in a continuous state will be uncertain due to the continuous state as those numbers will be in flux (trending toward infinity therefore undefined). And, therein, is the cause of uncertainty.

For example, in a positive direction, a value of 4 trends toward 5 or, in the negative direction, the trend is toward 3. And, in continuous time (state), because there are infinite real values between 4 and 5, these values are undefined (infinite).

This uncertainty does not apply to the actual attributes of any object as those are independent from assignment or measurement.

Applying Uncertainty Across the Spectrum

Since the macroscopic world is entirely dependent upon the existence of and, thereby, the laws of the microscopic world, uncertainty, regardless of how trivial the values may be, must apply to every observation.

This principle applies to all continuous observations and in all frames of reference.

Summary

Uncertainty is in the assignment of real values not in any observaion, an object's attributes or the calculation thereof.

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