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Discreteness and Determinism in Quantum Mechanics

Quantum mechanics is usually considered to be a theory based on indeterminism. Here we show that its mathematics actually suggests a completely deterministic underlying theory. This requires evolution operators that describe discretised jumps in space and time. To understand how the known elementary particles, arranged in the Standard Model, can be reconciled with this picture, the discrete and continuous symmetries must be understood. This could open new avenues towards model building.

We also briefly discuss the implications regarding Bell's theorem.

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