The Arrow of Time in Rigged Hilbert Space Quantum Mechanics

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Abstract

Arno Bohm and Ilya Prigogine's Brussels-Austin Group have been working on the quantum mechanical arrow of time and irreversibility in rigged Hilbert space quantum mechanics. A crucial notion in Bohm's approach is the so-called preparation/registration arrow. An analysis of this arrow and its role in Bohm's theory of scattering is given. Similarly, the Brussels-Austin Group uses an excitation/de-excitation arrow for ordering events, which is also analyzed. The relationship between the two approaches is discussed focusing on their semi-group operators and time arrows. Finally a possible realist interpretation of the rigged Hilbert space formulation of quantum mechanics is considered.

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