

A new discrete view to quantum mechanics

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Abstract:

I present a new discrete theory of quantum mechanics, in which particle movement is described by a directed space-time graph with attached 4-spinors, but without any continuous wave functions.

These graphs only consist of few spacelike edges, for bounded states the number is in the order of the quantum numbers and interactions only take place at the nodes.

The fundament is an extremal principle for a "LAGRANGian sum", from which both "field-equations" and "equations of motion" are derived, so the states (including the grid points) are completely determined.

As important demonstrations of the theory, the DIRAC-equation for the atom (spectra, SOMMERFELD-levels) is solved and the correct equations of a moving particle under LORENTZ-force are derived.

I hope, that this new approach will help to overcome some problems of quantum mechanics.

The complete paper can be found on my webpage

<http://icgem.gfz-potsdam.de/wolfk/QM/Main.html>

In case of problems reading this page, please let me know.
Comments and criticism are highly welcome, of course.

When contacting me per Email to the following address, please put the word 'nospam' somewhere in the subject line, so I cannot accidentally remove it.

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Enjoy,

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