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ABSTRACT

Quantum mechanics is reformulated in a way which eliminates ~~the~~^{its} present dependence on the special treatment of observation of a system by ~~the result is believed~~^{the result is believed} to be a more suitable formulation on external observer. The new formulation does not deny or contradict the conventional formulation, but is ~~but is~~^{it is} a more general and complete formulation from which the conventional interpretation can be deduced, within its own realm of applicability.

In this sense ~~it~~^{The new} theory plays the role of a metatheory for ~~the older theory~~. ~~It is an underlying theory made possible by the development of a method in which the nature and consistency of the conventional theory can be investigated and clarified.~~

The new theory results from the conventional formulation by omitting the special postulates concerned with external observation. In their place

~~relative state concept~~
~~concept of "relativity of states"~~

a method is developed for treating and interpreting the quantum description of isolated systems ~~within~~ within which observation processes can occur. Observers are represented within the theory by ~~purely~~ physical systems at all times subject to the same laws as all other physical systems. Abstract models for observers are formulated that can be treated within the theory as physical systems subject at all times to the same laws as all other physical systems. These isolated systems containing these model observers in interaction with other subsystems are investigated, and ~~the~~ changes ^{certain} that occur in an observer as a consequence of

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the interaction with the surrounding systems are deduced. When these changes are interpreted as the experience of the observer it is found that this experience will be in accord with the statistical predictions of the conventional "external observer" formulation of quantum theory.