ABSTRACT

Quantum mechanics is reformulated
in a way which eliminates the present dependence on
the special treatment of observation of a system by
the external observer. The new formulation does
for application to field theories, particularly general relativity,
not deny or contest but 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 plays the role of a meta-theory
for the older theory. The reformulation is
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
A method is developed for treating and interpreting the quantum description of isolated systems within which observation processes can occur. Observers are represented within the theory by physical systems 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 certain changes that occur in an observer as a consequence of
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.