

$$f(x) d(x-x_0)$$

Classical Liouville Theorem \Rightarrow Conservancy of info

Quantum Analogue - Correlations between noncommuting Variable
Orbo uncertainty principle.

Quantum Mechanics:

General Existence of Correlations when interaction

1

Composite Systems - density matrices

equivalence with prob. mixtures for operators
on subsystems. After Canonical Representation
as one where both density Matrices diagonal, $A^{S_1} B^{S_2}$
as the Canonical operators - Maximum information
properties of A, B , $\text{Existence of } \frac{\text{Canonical Correlation}}{\text{Trace Plus}} = \text{Trace Plus}$
 $= \langle A, B \rangle$ (conjecture that it is maximum correlation)

- Invariant with time in absence of interaction.

Conjecture, $H_I = -i\hbar \nabla A \cdot \nabla B$

→ Cononical Covar = $\ln(t+1)$ occurs between

Examples:

Relative Wavefunctions + density matrices

2]

Ideal Measurements: $(H_I = -i\hbar \left(\sum q_i \frac{\partial}{\partial r_i} \right))$

Correlations induced

Example & Picture for open measurement

Actual measurements - amplification - unstable systems

3]

Interpretation - Ideal Observer (semonochromism)

Interaction with system - effective splitting into number of ways of splitting - appearance to the observer - Validity of process (1) as subjective appearance to a selected observer.

⇒ Justification of usual entropy

Recap of introductory arguments. General Consistency of this Viewpoint (mathematically, if this not consistent then neither is old.)

4]

Implications: Formal theory free from statistical assumptions
(better suited to formulations of field theories, later
deduce statistical effects upon observers.)

Theory of Approximate Measurements. Analogy
of usual theory. Possibility of really analyzing all types
of processes, etc.

Simple resolution of Paradoxes like Einstein-Poss+Podolski

Insight into general nature of a quantum theory,
particularly into the role of correlations.

"Irreversibility" of measurement.