Dated : 9th Feb, 2019

On forced Parallelism within Characteristic States

Divyansh Mansukhani[1,2]
[1]EECS, MIT, Cambridge, MA 02139, USA
[2]ECE, SRMIST, Kattankulathur, 603203, India
divmansukhani@gmail.com

Characteristic states are shown to necessitate at least one parallel state to fulfil basic normalization. For this, an operator to input arbitrary state is formulated using inner product between dependent states.

I. STATE SETTING

While state ‘a’ is composed of single dimension basis, state ‘b’ is composed in one additional dimensionality. With basis dependant on {x,p}, {a,b} are system specific characteristic states.*

$$|a>=\sum_{\mu} C_\mu \psi_\mu(\vec{x},\vec{p}) \tag{1}$$

$$|b>=\sum_{\nu}\sum_{\mu}(C'_\mu C_\nu)\psi_\mu(\vec{x},\vec{p})\phi_\nu(\vec{x},\vec{p})(1-\delta_{\mu\nu}) \tag{2}$$

II. OPERATOR FORMULATION

Summations and Kronecker Delta are not considered within bra-ket inner product (3) between 1 and 2. 3 is rearranged as 4 to a) input state in place of ‘I’ and b) function as a supressed operator. Further, it is clear from that in 1 and 2 - combined probability amplitude in 3 is unnormalized. This necessitates any arbitrary state as one basis under normalized parental state.

$$< a|b >=\sum_{\nu}\sum_{\mu}(1-\delta_{\mu\nu})(C'_\mu C_\mu C_\nu) < \phi_\mu|\psi_\mu\phi_\nu > \tag{3}$$

$$\hat{O} =< C_{net}\psi_\mu\psi_\mu^{-1}|\psi_\nu >=< C_{net}\phi_\nu^{-1}|I > \tag{4}$$

III. CONCLUSION

Since parental state composes of concerned arbitrary state and others, and that if parental state is claimed to construct concerned system, arbitrary state is forced to exist with ‘parallel’ states.

*Basis for each dimensionality is taken to be Hermitian.