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Dirac Notation Property :-

OR

Ket - Bra vectors properties :-

Space vector is independent of representation of but component depend on "

eg $\vec{r} = x\hat{i} + y\hat{j} + z\hat{k}$

$= ( )\hat{r} + ( )\hat{\theta} + ( )\hat{\phi}$

$= ( )\hat{s} + ( )\hat{\phi} + ( )\hat{z}$

In Sch^{n} rep^{n} → state is represented by sc
but in Dirac rep^{n} → " " " " vect
In dirac rep^{n}, unit vectors rep^{n} basis
for a vector, there may be ∞ no. of ba
Vector will be basis vector if they satisfy t
orthonormality cond^{n} i.e.

$\hat{i}\cdot\hat{i} = 1$, $\hat{i}\cdot\hat{j} = 0$, $\hat{i}\cdot\hat{k} = 0$

If 2 state vectors $|\phi_1\rangle$ & $|\phi_2\rangle$ ther

⇒ If they have some relationship then by chang
ϕ_1 →, ϕ_2 will be change so that relation rema
same.

relation → $|\phi_1\rangle + 2|\phi_2\rangle = 0$

Then these vectors are Linearly dependent vecto

⇒ But In Linearly Independent → No relation b/w vector

⇒ Consider a linear combination of state state.

$|\phi_1\rangle, |\phi_2\rangle \cdots\cdots |\phi_n\rangle$

$\sum_n C_n |\phi_n\rangle = 0$

⇒ If $C_n = 0$ ⇒ Linearly dependent

$C_n \neq 0$ ⇒ Linearly Independent

for Ex → If we have 10 vectors & $C_1 = C_3 \neq 0$ &
~~all other~~ other, then ~~2~~ vectors corresponding to C_1, C_3 → L.D