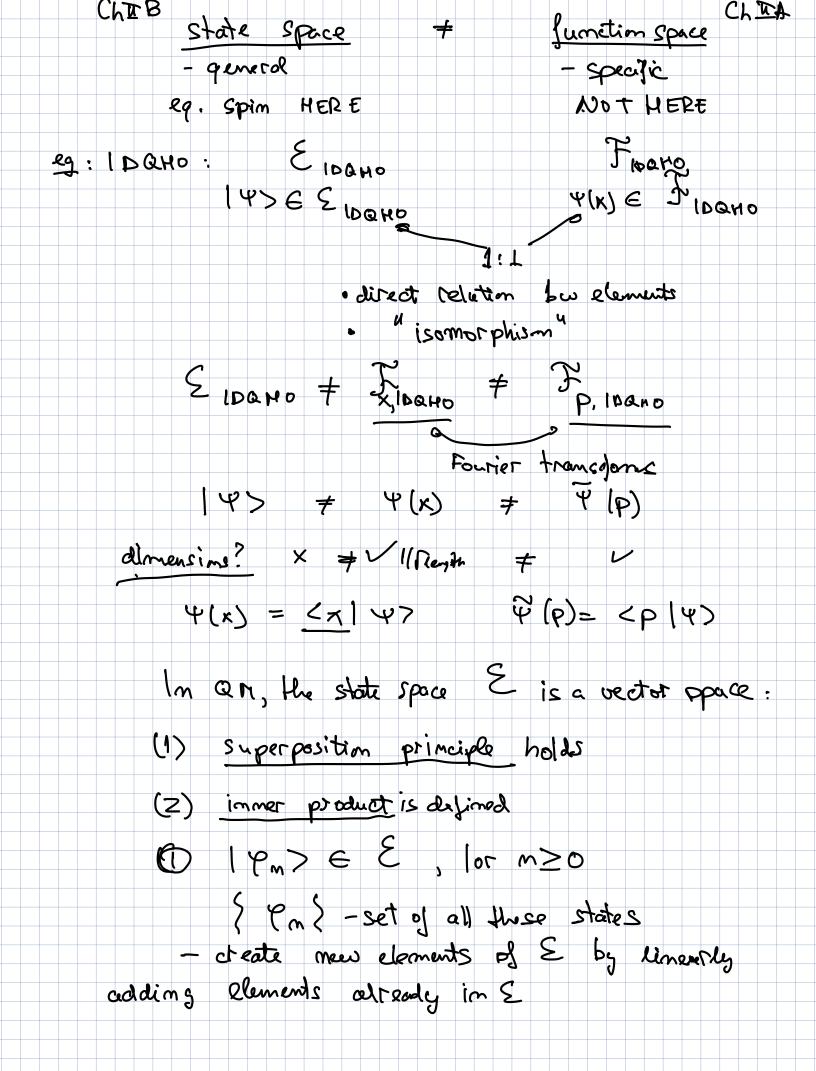
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14>= & cn/Pm> E & cn/P ex: (x>, (y>, 12> in 30 spou C1 (x) + C2 (y) + C3 (+) - any pisition in space @ immer product - how much vectors overlop Overlop 0 = perpandicular = orthogonal Let 14>, 14> 6 & 1 immer product of 1 pm 14>: (143 142) - Scolar E C Dirac molation new Symbol: < P1, 4 brow 2 rotes o cut go tousorg ramai - < 4/9 > - Scalor EC Properties of inner products · limear In 2 nd term < 9 | 1, 4, + 12 42> = < 4 | 2, 4, > + < 4 | 2 42 = $=\lambda_1 < \varphi | \varphi_1 > + \lambda_2 < \varphi | \varphi_2 >$ · anti-linear in 1st term • 14> € E - must be mormelitable

· < 4/4> >0, fimite ∈ IR · When momnalised (4)4)=1. ? mean ti asa toda - vard - 19> termally: Forexy 141 in &, there exists < 9/ E & * - " dual space" er: \(\tau\) = <x1 \(\psi\) <x1 e s* Q: isthere 1x> im s? $|x\rangle = 3(x-x)$ (4) E => < 41 E E* λ, | Ψ, > + λ2 | Ψ, > => λ* < Ψ, 1 + λ2 < Ψ, 1 " antilineer" Dirac: System of Kets, bras, scalors S > < 9 / Tal : 270 to 1890