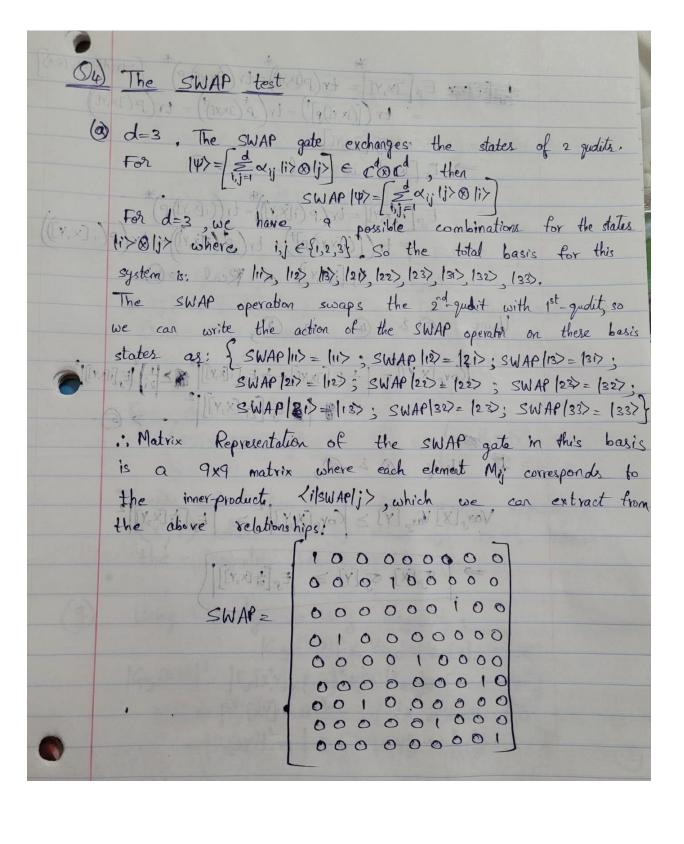
Collaborators : None

Sources : Lecture Notes



	9
(b). In matrix representation, SWAP gate simply swaps the	-
maices of the 2-quaits, & since it only permutes	-
the basis states without any complex conjugation, it is clearly	0
a real matrix. And SWAP operation is also symmetric.	9
Thus. SWAP = SWAP : SWAP = SWAP	-
SWAP = SWAP = SWAP is Hermilian.	9
(h) x(n) 8(n) x(n) x(v) = 680	-
(c) To prove that SWAP is "basis-independent", we need to	-
show that the SWAP operation applied to any arbitrary	-
linear combination of tensor products of basis states results	-
in the same linear combination but with swapped indices.	9
Suppose, we have a state in the form:	
Sul so Kini = Kini skipi skipi skipi Bijluis luis	-
of let floods a for fitted in Section 10	
Then	7.6
(9) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1	-
142 4 2 5 4 1 2 5 4 1 2	•
) d> = \$ Bij [& < b_ u > b_)	6
	6
16>= = = [Bij (bk nix phinix) pk> (phin)	-
Analysis (1) AP - (1) AD - (1)	1
Applying SWAP = SWAP D = 2 2 (B) (b) (b) SWAP	-
SWAPID? = SE (Bij (bx u, > < bplu) (bx) (inter property)	-
Alex lus & lus & lus & lus & lus & lus & lus and in	
(Sullus By luj > @ lu; > (Here luis & luj) qudik)	
:. SWAP is basis-independent	
- John	

