
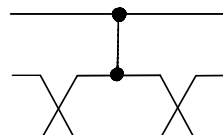
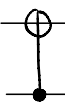
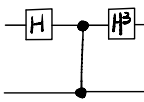

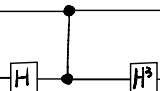
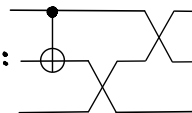
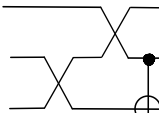
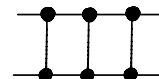



Def 5:  := 



Def 2:  := 

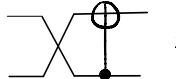
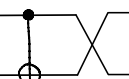
Def 4:  := 

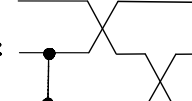
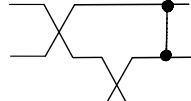
$C_{15}^8$ :  = 

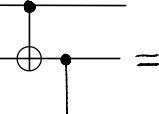
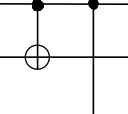
$C_6^*$ :  = 

$R_{16}$ :  = 

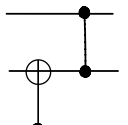
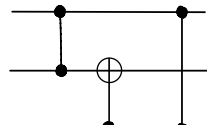
$R_{17}$ :  = 

$R_{31}$ :  = 

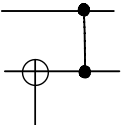
$C_{15}$ :  = 

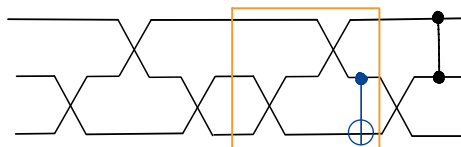
$C_{16}$ :  = 

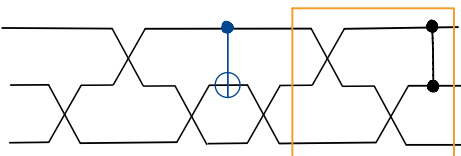
Lem J  $C_{16}^2$  is a consequence of  $C_{13}$ ,  $C_{15}$ ,  $C_{16}$ , and the two-qutrit Clifford completeness, alongside the derived generators.

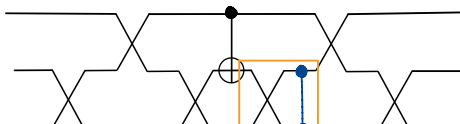
$C_{16}^2$ :  = 

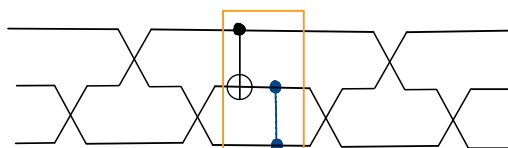
Proof:

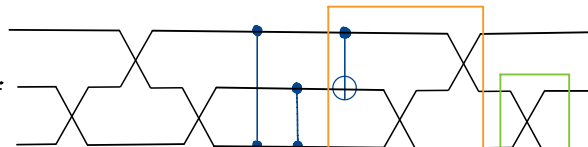
$C_{16}^2$ . LHS :=   $\stackrel{R_{16}}{=}$  

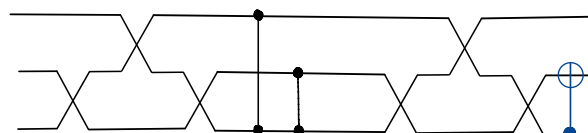
$\stackrel{R_{31}}{=}$  

$\stackrel{C_{15}^8}{=}$  

$\stackrel{C_{15}}{=}$  

$\stackrel{R_{17}}{=}$  

$\stackrel{C_{16}^1}{=}$  

$\stackrel{R_{31}}{=} \stackrel{C_{15}^8}{=}$  

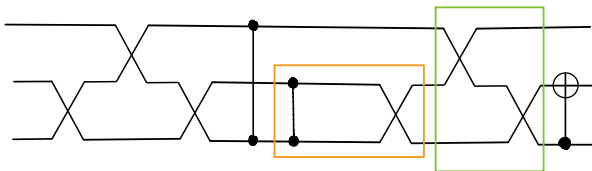
$$\begin{array}{lll}
 R_{16}: \text{diagram} = \text{diagram} & R_{17}: \text{diagram} = \text{diagram} & R_{31}: \text{diagram} = \text{diagram} \\
 C_{15}^2: \text{diagram} = \text{diagram} & C_{15}: \text{diagram} = \text{diagram} & C_{13}^1: \text{diagram} = \text{diagram} \\
 C_{15}^8: \text{diagram} = \text{diagram} & \text{Def 5}: \text{diagram} := \text{diagram} & C_{13}^7: \text{diagram} = \text{diagram}
 \end{array}$$

**Lem J**  $C_{16}^2$  is a consequence of  $C_{13}$ ,  $C_{15}$ ,  $C_{16}$ , and the two-qutrit Clifford completeness, alongside the derived generators.

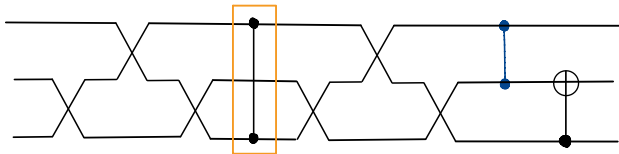
$$C_{16}^2: \text{diagram} = \text{diagram}$$

Proof cont.

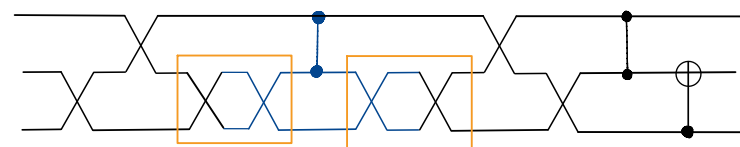
$C_{16}^2$ . LHS =



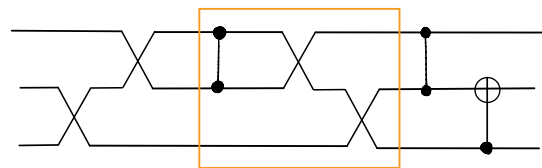
$\underline{\underline{R_{17}}}$   
 $\underline{\underline{C_{15}}}$



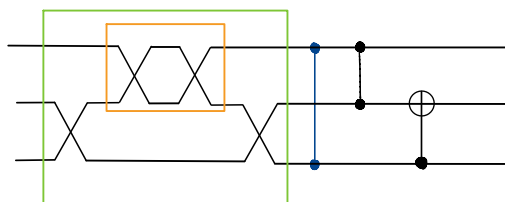
$\underline{\underline{\text{Def 5}}}$



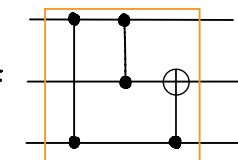
$\underline{\underline{R_{16}}}$



$\underline{\underline{C_{15}^2}}$



$\underline{\underline{R_{16}}}$



$\underline{\underline{C_{13}^1}}$   
 $\underline{\underline{C_{13}^7}}$

